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2007
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A Note from the Editors

The year 2007 has been—as usual—a very busy one. The number of submissions has continued its gradual increase. Although this means more work for the editors, it also means that the number of publishable papers is increasing. Consequently, the competition for getting one’s paper published in SKY Journal of Linguistics is becoming harder. Although we are naturally concerned about the increased amount of work involved in editing the journal, we are at the same time delighted with the quality of the published papers. We therefore thank our contributors for a job well done.

Editing a small journal is not just work done by us editors. Throughout the year we contact the members of the editorial board and external reviewers, and ask their willingness to read and review submitted papers. What is so striking is that almost every time we contact a language expert with our request, the response is friendly and positive. For a small journal this is extremely important, because the quality of the papers is improved significantly by the reviewers’ help, input and suggestions. Consequently, we—again—want to express our sincere gratitude to the members of the editorial board and all the referees for the past year. We wish that the positive co-operation will also continue in the coming years.

This year, the publisher of SKY Journal of Linguistics, The Linguistic Association of Finland, celebrated its 30th birthday. During its 30-year existence, the Association has surely witnessed many challenges that linguistics as a field has faced, and changes that it has undergone. These challenges were the theme of the anniversary symposium that was held in Helsinki in February 2007. One specific challenge for linguistics, which in turn was discussed in a special theme session organized by the Association in the annual Finnish Conference of Linguistics (May 2007, University of Oulu), is inter- and cross-disciplinary research. Linguistics has never been an introspective field. It has influenced and been influenced by various disciplines ranging from sociology and anthropology to mathematics and technological sciences. It seems, however, that at present the amount of inter- and cross-disciplinary research between linguistics and other disciplines is increasing, and also becoming more challenging. These challenges have not gone unnoticed by us editors, either. During the recent years we have witnessed an increase in the number of interdisciplinary papers that deal with linguistic phenomena but rely on theories and methodologies from other non-linguistic disciplines.

In May 2007 the sad news of Dr. Orvokki Heinämäki’s untimely death reached the editors of SKY JoL. Orvokki Heinämäki worked as a lecturer at
the Department of General Linguistics at the University of Helsinki. She was a distinguished and loved colleague and also a member of the SKY JoL’s editorial board. This volume of SKY Journal of Linguistics is dedicated to her memory.

Pentti Haddington  Leena Kolehmainen  Mari Lehtinen  Jukka Mäkisalo
External Reviewers of *SKY JoL* 20 (2007)

In addition to members of the current advisory editorial board, the following scholars, among a few others wishing to remain anonymous, have acted as external reviewers for *SKY Journal of Linguistics* in 2007:

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Guy Achard-Bayle

De l’extra- à l’intraprédictatif : polyvalence de Si ?

Résumé

Sur la base de travaux que j’ai pu entreprendre sur la polyphonie de corrélations $Si P, Q$, je me propose dans cet article de montrer qu’un certain nombre de propositions subordonnées introduites par $Si$, dans l’ordre : $Si P, Q$ ou : $Q, si P$, ne se rangent pas toutes, ou toujours aussi facilement que les exemples des grammaires ne le laisseraient croire, dans les deux grandes catégories syntaxiques et sémantiques qu’on leur assigne traditionnellement : les circonstancielles (hypothétiques ou conditionnelles) vs les interrogatives indirectes (complétives, percontatives). Je me propose d’explorer cette zone de confusion où la condition et l’interrogation ne se distinguent plus nettement, et de chercher au travers d’exemples attestés à expliciter et justifier la complémentarité des deux interprétations, sinon leur continuité.

Introduction

Un certain nombre d’études en syntaxe et sémantique, voire la plupart, considèrent $Si$ comme un outil « bon à tout faire. » J’ai consacré deux études (2005, 2006) à sa supposée polysémie. Je dis « supposée » dans la mesure où d’une part on arrive à recenser jusqu’à trente nuances sémantiques du seul introducteur subordonnant hypothético-conditionnel (Banys 2001) ; d’autre part où j’ai proposé dans ces études une lecture macrosyntaxique et discursive qui tend à montrer (i) que le contenu sémantique déterminant n’est pas tant celui de $Si$ que celui de $Si P$ — et plus exactement de $Si P$ dans la corrélation $Si P, Q$ ; et (ii) que ce contenu est, lui, déterminé par le co- ou le contexte : à commencer certes par la relation logique et aval instaurée par les prédications successives de $P$ et $Q$, mais sans négliger pour autant les relations (concessives, argumentatives, échoïques, topicales…) qu’une $Si P$ peut entretenir, métadiscursivement, en amont — d’où sa double portée.

Quant à la polyphonie fréquente des divers types sémantiques de $Si (P, Q)$ recensés, qui incite à unifier leur interprétation, elle vient de ce que d’une part l’introducteur, de l’autre la corrélation entrent dans une série de relations co- et contextuelles qui font de l’énonciation et de l’énoncé...
soumis à condition une chambre d’écho : un écho à des croyances ou des savoirs, plus ou moins partagés, présupposés, admis par nature ou convention ; mais dont la valeur de vérité est suspendue, dans cet espace et par cet acte énonciatifs, le temps d’une supposition, plus ou moins réalisable certes, en tout cas négociable par les interlocuteurs.


(0)  S’il vient, je t’informerai.

Si l’on prend en effet pour critères la fonction argumentale ou non de Si P et sa participation ou non à la prédication Q (P intra- vs extraprédicative), il apparaît, notamment grâce aux tests de déplacement / détachement et de pronominalisation ou de reprise pronominale, qu’une continuité existe bien, en termes de lexique-grammaire, qui mène insensiblement d’une complétive à une circonstancielle :

(0a)  Je te préviendrai s’il vient.  →  S’il vient, je te préviendrai.

(0b)  Je ne sais pas, si l’on pouvait faire d’une pierre deux coups…
      (Attesté, entendu à la radio)

(0c) Je me demande s’il viendra. → Je me le demande.

(0d) S’il vient, je te préviendrai. → *Je te le préviendrai /+ Je t’en préviendrai.

(0e) S’il vient, je t’informeras. → Je t’en informerai.

Plan

Mon étude et ma démarche consisteront donc essentiellement en l’exploration des marges de la condition et de l’interrogation ; en fait de marges, j’explorerai cette zone où l’une et l’autre se rejoignent, ou ne se distinguent plus nettement. Je présenterai pour commencer (1) la problématique de cette zone floue, in medias res, par l’analyse d’un exemple attesté. Après un premier bilan (2), je tracérai et justifierai (3) l’évolution qui m’a conduit de la polysémie circonstancielle de Si à sa polyvalence d’introducteur de conditionnelle comme d’interrogative (indirecte). Les deux dernières parties me permettront (4) d’explorer de nouvelles zones de confusion, et (5) de proposer, sur la base d’un autre exemple attesté, un compromis pour en sortir.

1. In medias res : aux marges de la condition et de l’interrogation

Je vais d’emblée aborder par un exemple cette zone où s’estompent les limites qui séparent la subordonnée interrogative indirecte et la circonstancielle, toutes deux introduites par Si. L’exemple est une transcription de l’oral (et lui-même l’oralisation d’un texte écrit)² :

(1a) Elle ne dit pas si je suis candidate. (France Inter, journal de 13h, 21 août 2006, sur le discours de S. Royal invitée de la Fête de la rose le dimanche 20 août, à Frangy en Bresse, Saône-et-Loire)³

² Le journal de 13h de France Inter reste en ligne 24h, mais n’est ni enregistrable ni podcastable comme le sont ceux de 8 et 19h. J’ai néanmoins pu le réécouter toute l’après-midi du 21 août 2006 et vérifier le schéma prosodique.

³ Voir la version du Monde en ligne le 21 août 2006 : « Elle a fait un pas de plus vers sa candidature officielle en s’engageant, pour la première fois, sur le terrain des promesses : “Si je suis en situation, la valeur travail sera reconstruite.” “Si je suis en situation, a répété Mme Royal, nous ferons de la France le pays de l’excellence environnementale. (...). La France aura une parole qui porte dans le monde.” »
Pour comprendre en quoi cet exemple a pu retenir mon attention, il faut le prononcer tel que je l’ai entendu, c’est-à-dire sans la prosodie particulière (intonative et rythmique, et notamment la pause) qu’on pouvait attendre, avec une pause, et qu’on aurait en :

(1b) *Elle ne dit pas // Si je suis candidate.*

⇒

(1c) *Elle ne dit pas : « Si je suis candidate… »*

Il faut donc prononcer (1a) avec une seule courbe mélodique, unique et unie, ascendante / descendante :

(1d) *Elle ne dit pas si je suis candidate.*

Ce schéma prosodique induit une interprétation Verbe + Complément, autrement dit une interprétation de la subordonnée comme une complétive interrogative indirecte (une percontative dans le vocabulaire Damourette & Pichon, puis Le Goffic et Fournier), alors même que la première personne du sujet et du verbe de cette apparente interrogative indirecte ne renvoie évidemment pas au locuteur (le journaliste rapporteur de propos) mais à l’énonciateur (des propos rapportés). Autrement dit, à première écoute, (1a) est à la fois entendue (au double sens du mot « entendre ») syntaxiquement comme (1e) et sémantiquement ou discursivement comme (1f) :

Voir aussi la version du *Figaro* en ligne (même date) : « Tout en évitant de se déclarer complètement candidate, Royal s’est, pour la première fois, mise en situation de présidente. “Le rôle d’un chef d’État, c’est de fixer un cap et de veiller à ce qu’il soit tenu.” Répondant par avance aux partisans de l’ancien premier ministre Lionel Jospin, elle a récusé l’idée que “l’expérience” soit nécessaire pour diriger la France : “Ce qui compte c’est la capacité à mobiliser l’expérience collective.” [Changement de §] “Si je suis en situation”, a-t-elle répété avant de décliner ce qui pourrait être ses priorités : “La valeur travail sera reconstruite”, la France deviendra le pays “de l’excellence environnementale” ou encore la France “assumera de manière exemplaire ses devoirs envers les pays pauvres.” »
(1e) *Elle ne dit pas qu- P.*

(1f) *Elle ne dit pas si elle est candidate*.4

Du fait, toutefois, que cette manière de rapporter des propos est pour le moins originale, l’interprétation s’oriente alors — suivant mon expérience cela s’est fait dans un second temps et de manière bien plus métalinguistique — vers la forme ou le type du discours rapporté ; en l’occurrence, il me semble être un *mixte* de discours indirect (DI), direct (DD) et direct libre (DDL) : DI du fait du verbe de parole introducteur et de la fonction intraprédicative et argumentale du subordonnant dans la configuration syntaxique (1d) induite par la prosodie ; DD du fait de la 1ère personne ; et DDL5 du fait de l’absence de pause, donc d’isolement du discours cité (au sens d’*îlot textuel*)6.

Comme il est parfois difficile de justifier le bien-fondé d’une interprétation spontanée lorsqu’elle fait l’objet d’une démonstration métalinguistique, je voudrais montrer ou faire voir la différence qu’il y a à mon sens entre la manière dont j’ai entendu et transcrit (1a) et :

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4 Sur le rôle capital de la prosodie dans l’interprétation des diverses Si P circ., cf. de Vogüé (1992 : 133).
5 Pour le DDL, je m’appuie sur les travaux de Nølke et al. (2004) et sur Rosier (1999 : 266 sq.) qui l’étudie dans « un continuum allant d’une hétérogénéité montrée à une dilution » (op. cit : 269, souligné par elle).
6 Cf. Perrin (2003 : 63) : « Dans son usage *normal*, élémentaire, le langage est *transparent*, car il n’est que le moyen, le véhicule de ce qui est dit. Il n’est en rien l’objet de la communication. Les mots ne font que relayer conceptuellement ce dont il est question dans le discours (c’est-à-dire de tout autre chose que des mots et des phrases dont il se compose). Dans de nombreux cas cependant les mots ne font pas l’objet d’un usage *normal* et peuvent être dits plus ou moins *opaques*. Le cas le plus évident est celui des citations directes. Les mots cités peuvent être dits *opaques* dans le sens où il est bel et bien question de ces mots dans ce cas, au niveau de ce qui est ostensiblement communiqué, plutôt que de ce qu’ils représentent conceptuellement ».
Et Perrin (2004 : 64) : « Dans le cadre d’un discours rapporté référentiel, l’élément rapporté n’est précisément qu’un simple objet de référence et n’est donc nullement activé dans le discours effectif du locuteur (…) Dans le cadre d’un discours rapporté modal, en revanche, l’élément rapporté est simultanément activé dans le discours effectif du locuteur et ne peut donc être assimilé à un simple objet de référence de ce qui est communiqué. »
(2a) Le général [de Gaulle] a laissé flotter l’incertitude jusqu’au 4 novembre [1965]. Ce jour-là, celui de la Saint Charles, les Français qui ont allumé leur poste de télévision ou de radio à 20 heures ont entendu le président de la République leur dire ceci : « Que l’adhésion franche et massive des citoyens m’engage à rester en fonctions, l’avenir de la République nouvelle sera décidément assuré. Sinon, personne ne peut douter qu’elle s’écroulera aussitôt et que la France devra subir — mais, cette fois, sans recours possible — une confusion de l’État plus désastreuse encore que celle qu’elle connut autrefois. » (Le Monde, 22 août 2006, « Moi, ou le chaos », article sur les premières élections au suffrage universel du président de la République française)

Ici, on notera que le subordonnant *Que*, à valeur hypothétique (cf. *Sinon*…), n’a pas de fonction ou d’interprétation possible comme intégrateur argumental, quelle que soit par ailleurs sa relation avec le COD *ceci* cataphorique ; cela s’explique par le fait (i) de sa séparation, de son isolement du verbe introducteur de parole *dire*, et (ii) de sa fonction d’introducteur de la subordonnée *P*, qui elle-même introduit à *Q*, qui lui est corrélée :

(2b) \[P\] Que l’adhésion franche et massive des citoyens m’engage à rester en fonctions, \[\rightarrow Q\] l’avenir de la République nouvelle sera décidément assuré.

Il y a donc la même différence, en termes de macrosyntaxe, entre les subordonnées de (1a) et de (2a) qu’entre celles de :

(3a) *Je demande qui m’aime.*

Vs

(3b) *Je demande : qui m’aime me suive !*

Compte tenu du lexique-grammaire du verbe *demander*, la subordonnée de (3a) est totalement intégrée à la valence du verbe principal, celle de (3b) joue sur les deux tableaux prédicatifs :

(3a) *Je demande qui m’aime*

Vs
Il me reste enfin à dire à propos de (1a) que l’interprétation mixte que j’en fais (fusion-confusion entre complétive et subordonnée) me semble non seulement plausible par les conditions de son émission et de sa réception sonore, i.e. par le fait que le journaliste oralise un texte écrit, mais encore pour ces trois raisons :

- parce que les procédés de discours rapporté (DR) sont variés (mais, comme on l’a dit, inscrits dans un continuum) ;
- parce qu’ils ouverts à tous les écarts qui marquent ou veulent marquer socio-discursivement un genre ;
- enfin et surtout, et c’est tout l’objet de cette étude, parce que Si est à la fois un et polyvalent : hypothétique ou éventuel, et — ceci expliquant cela ou l’inverse — interrogatif, marqueur d’alternative dans ce cas, comme il était dans le précédent suspenseur de valeur de vérité.

Reprenons ces trois raisons :

1. En ce qui concerne la première, je renvoie à Perrin (2004), et comme lui à Blanche-Benveniste (1988)\(^7\), pour rappeler qu’il y a un continuum qui va de la rection forte à la rection faible du verbe de parole sur la subordonnée P de DR : du verbe à COD du type *qu*-P au verbe de parole en incise. Pour ma part, j’intercalerai ce que Le Goffic (1993 : 409, suivant Bally)  

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\(^7\) « Selon Claire Blanche-Benveniste (1988), [dans les cas où « la reprise est articulée à une clause métalinguistique *en incise* ] la séquence rapportée n’est pas forcément régie (ou n’est que faiblement régie) par le verbe *dire* (...) Délivrée des contraintes syntactico-sémantiques du verbe introducteur (qui agit à première vue comme un opérateur de discours rapporté référentiel lorsqu’il est en situation de régir une séquence discursive), la reprise peut alors être librement interprétée comme consistant non seulement, en tant que reprise, à *reproduire* un discours, mais simultanément à *produire* ce qui est communiqué par le locuteur. »
appelle « les “tours” intégratifs ("disloqués") mais avec anaphore qui oriente vers l’interprétation percontative » :

(4a) Si ça vous dérange, dites-le moi franchement.

(4b) Mais dites-le, si vous n’êtes pas d’accord.

Et même sans anaphore dans :

(4c) Écrivez-moi si vous voulez venir.

2. En ce qui concerne la deuxième raison : l’écart syntaxique et discursif est ici permis et justifié, et même encouragé me semble-t-il, par l’étrangeté du propos rapporté lui-même : « Si je suis en situation » est employé plutôt que, ou au lieu de « Si je suis candidate », voire « élue. » De ce fait, le fragment rapporté P est deux fois « en mention » : une fois parce qu’il est précisément rapporté, une autre parce qu’il est exhibé en tant que tel, littéralement. Cette exhibition permet d’expliquer le rapport au DDL (donc le maintien de la première personne). C’est ce qui explique aussi, me semble-t-il, la manière peu orthodoxe dont Le Figaro le rapporte :

(5a) « Si je suis en situation », a-t-elle répété avant de décliner ce qui pourrait être ses priorités : « La valeur travail sera reconstruite », la France deviendra le pays « de l’excellence environnementale » (Le Figaro.fr du 21 août 2006)

8 « Avec dire, si P peut s’interpréter comme percontatif ou intégratif » (Le Goffic 1993 : 409).
9 Cf. (0b) : « Je ne sais pas, si on pouvait faire d’une pierre deux coups » (exemple — attesté — où Si P ne nécessite pas de Q).
10 Je m’appuie ici sur Philippe (2002 : 82–84) qui notamment après Bally et Thibaudet étudie le DIL (SIL) comme un écart marquant la langue littéraire. Je vise pour ma part la langue ou le « style » journalistique ; pour un autre exemple, parmi d’autres, voir ci-dessous (5a).
12 À rapprocher de ces « expressions en tant que signes qui révèlent [le DIL] » in Lips (1926 : 66) citée par Philippe (op. cit. : 73, note 1 ; je souligne).
On comparera ainsi cette manière de DR à la version du Monde :

(5b)  *Elle a fait un pas de plus vers sa candidature officielle en s’engageant, pour la première fois, sur le terrain des promesses : « Si je suis en situation, la valeur travail sera reconstruite. » « Si je suis en situation, a répété Mme Royal, nous ferons de la France le pays de l’excellence environnementale. »* (Le Monde.fr, même date)

On relèvera alors, dans Le Figaro, l’autonomie à laquelle tendent, par une majuscule à l’initiale de chaque proposition, les citations corrélatives P, Q (P ⊃ Q) :

(5a)  « *Si je suis en situation », a-t-elle répété avant de décliner ce qui pourrait être ses priorités : « La valeur travail sera reconstruite… »*

Le journal de 8h de France Inter, deux jours plus tard, le mercredi 23 août, semble confirmer cette interprétation *exhibitionniste* :

(5c)  *Comme Ségolène Royal à Frangy sur Bresse le week-end dernier, l’ancien Premier ministre [Laurent Fabius, la veille au soir] a dévoilé ses engagements. À chacun sa formule : pour lui, ce n’est pas « Si je suis en situation » mais « Si je suis investi et élu. » Laurent Fabius propose notamment d’augmenter le Smig de 100 euros dans un premier temps.*

On voit qu’ici aussi la proposition P est isolée de sa corrélative Q, dont je restitue la continuité ou la séquentialité en :

(5d)  « *Si je suis investi et élu, je propose notamment d’augmenter le Smig de 100 euros. »*

3. J’arrive ainsi à ma troisième raison : car je peux ou je dois compléter, alors, l’exemple (1a) dans le sens de cette autre continuité ou ce continuum qui relierait l’hypothèse à l’interrogation (ou l’inverse) :

(1f)  *Elle ne dit pas si je suis candidate, encore moins si je suis présidente, non elle se contente de répéter si je suis en situation.*
Ici en effet, l’occurrence du verbe « répéter » ne permet plus la (con-)fusion, car il n’est pas fréquent\(^\text{13}\) de le rencontrer comme introducteur d’interrogative indirecte, alors même qu’il est un verbe de parole et pourrait être l’introducteur d’un propos rapporté interrogatif ; mais dans ce cas, le propos devrait être rapporté directement :

\[1g\] *Elle est obsédée par la question de sa victoire et ne cesse de répéter : « Suis-je en situation de l’emporter ? »*

2. **Premier bilan : s’il y a des limites, il a bien des « marges »**

Il y a donc des limites à la polyvalence de Si, autrement dit à sa plasticité d’une part syntaxique, de l’autre discursive ou pragmatique\(^\text{14}\) : ce sont les limites, notamment, que nous dictent le lexique-grammaire des verbes qui permettent d’introduire une complétive et/ou une circonstancielle\(^\text{15}\). En somme, c’est ce à quoi nous contraint le lexique-grammaire des verbes :

Ces deux langages [celui de la syntaxe : celui des formes / des catégories, et celui des relations / des positions] peuvent être tenus à propos des deux systèmes de régulation [structure + lexique] qui font que tout ne peut pas se dire, que les termes ne sont pas disposés n’importe comment : le système de régulation par la structure, le système de régulation par le lexique. (Delaveau 1992 : 107)

Le problème néanmoins, s’il n’est pas de nier ces systèmes de régulation, est de ne pas chercher aux marges, et plus exactement aux marges

\(^{13}\) Voire possible ? Je n’ai trouvé aucun emploi de ce type dans les 100 premières occurrences de « répéter si » et de « répète si » sur Google, qui sont toutes du type « répéter » intransitif ou pronominal ou « répéter » + COD + Si P circ. Il n’y a aucune occurrence de « répéter si » dans le TLF quelle que soit la valence du verbe.

\(^{14}\) Pour les « marges » comme pour la « plasticité » de Si, je fais référence à Vogüé (2004).

\(^{15}\) En cela, je poursuis, modestement, l’entreprise de Bally analysée par Philippe (op. cit : 70) : « S’il situe le SIL dans le champ de la compétence de la grammaire, Bally reste fort nuancé sur ce point et articule finement description syntaxique et considérations interprétatives : “[le SIL] ce n’est pas une forme de grammaire, c’est une attitude de l’esprit, un aspect, un angle particulier sous lequel il aperçoit les choses ; et — chose à bien noter — ce n’est pas une observation purement psychologique qui fait découvrir cette forme de pensée, elle se déduit de l’étude même de la langue” (Bally 1912 : 605–606). »
discursives, du lexique-grammaire des verbes ; il est donc de nier ces marges où les systèmes se dérégulent. C’est ce que fait Delaveau, qui part de deux « points » ou « problèmes » (art. cité : 108) ; selon elle en effet :

- Toutes les conditionnelles ne sont pas mobiles, ce qui contrevient au fait que par principe les circonstanciels par opposition aux compléments argumentaux sont « non dépendants », et donc n’obéissent pas à une « hiérarchie des positions. »
- « La zone d’ambiguïté entre l’interprétation conditionnelle et l’interprétation interrogative des phrases en *si* est très réduite : elle se limite à la place finale, avec pause, avec détachement [voir 6a] » :

(6a) *Je serai étonnée, si elle rate son examen.* (Delaveau, art. cité : 118, suivant Grevisse 1981 et Sandfeld 1936)

= 

(6b) *Q de ce que P.*

Vs

(6c) *Q au cas où P.*

Je suis d’accord avec le premier point — voir infra les exemples (10a) de Vogüé (1992) et (10b) de Charolles (2003) —, et pour le second point, avec la position finale, mais je ne le suis plus avec la pause et le détachement, puisque dans l’exemple (1a) qui nous occupe toujours, c’est bien le contraire qui provoque la confusion. En outre, après avoir posé ces problèmes, ceux que posent les Si P interrogatives ou circonstancielles, Delaveau (art. cité : 108) annonce aussitôt le « résultat » 16 ; après avoir dit : « On tiendra pour acquis qu’il n’y a pas de position initiale de phrase où on ait une interprétation interrogative » 17, elle ajoute : « Or, en position finale, avec pause, les cas d’ambiguïté sont encore réduits par le fait que la liste

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16 Ce qui s’explique car elle résume alors sa thèse d’état de 1990 sur le même sujet.
17 Voir l’inverse chez Corminbœuf (2006, à par.).
des verbes qui introduisent une interrogative est bien délimitée. » Elle poursuit : « En conséquence, il n’y a pas de construction “monstrueuse,” qui participerait des deux modes d’interprétation de si. » Et elle conclut : « Il n’y a pas de forme qui permette de passer insensiblement de l’une à l’autre (…) Il n’y a pas de continuum de l’interprétation. » Et c’est là que je diverge vraiment : il y a un marqueur Si qui participe à la fois de l’expression de l’interrogation donc du doute, et de l’expression de l’hypothèse, ou de la condition, ce qui est une autre forme du doute (on y reviendra).

Je viens d’employer le mot « expression » (de l’interrogation ou du doute) pour signifier que j’aborde la question des structures ou des formes également d’un point de vue discursif (ou macrosyntaxique). Le problème méthodologique est, alors, l’élaboration de listes, de lexiques-grammaires, de corpus, « verbatim » comme le dit et le réclame Wilmet (1997 : 531, à propos précisément des circonstanciels). Or c’est bien cette plasticité du discours, et ses effets sur la structure, en l’occurrence la plasticité du discours à assimiler des propos donc des propositions hétérogènes, qui permettent des « monstres » linguistiques tels que (1a) ; ce qui fait que, pour en finir avec ces conclusions partielles, je ne partage pas la conclusion ultime de Delaveau (art. cité : 121) :

Il n’y a pas de monstre linguistique ; je veux dire par là qu’il n’y a pas de configuration qui mélèrait une construction x avec une interprétation y (…) il n’y a pas de complément à interprétation conditionnelle. Mais il n’y a pas non plus de phrase

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18 Je suis d’accord (cf. ma remarque ci-dessus sur « répéter » vs « dire ») mais le problème reste l’établissement « in vitro » de cette liste, qui par définition exclut les écarts, les recherches à la marge.

19 Encore faudrait-il faire la différence entre ambiguïté et confusion.

en *si* qui ne soit pas complément et qui ait une interprétation interrogative.  
(Delaveau, art. cité : 121)

J’en donnerai et analyserai d’autres exemples en quatrième et cinquième parties. Auparavant je vais rappeler le cheminement qui m’a mené aux *marges* de la condition, où celle-ci rencontre l’interrogation.

3. Polyphonie et polyvalence de *Si*


21 “A conditional clause is (perhaps only hypothetically) a part of the knowledge shared by the speaker and his listener. As such it constitutes the framework which has been selected for the following discourse.” Cette position, rappelle Haiman, était déjà celle de Jespersen (1940) qui voyait dans les conditionnelles un condensé de mini-séquences conversationnelles mettant en scène une séquence question-réponse… Voir ensuite Ford et Thomson (1986) et Ramsay (1984).
Je ne donnerai ici que deux exemples qui montrent cette continuité qui existe entre une valeur de Si explicitement logico-sémantique, centrée sur la véridictionnalité (la valeur potentiellement vraie de la proposition P selon le locuteur), et une valeur discursive / échoïque, centrée sur la reprise citationnelle et conditionnelle par le locuteur principal du propos assertif d’un locuteur secondaire :

(8a) *S’il est vrai que l’Europe est une vallée de larmes…* (Fabriqué)\textsuperscript{22}

(8b) *Si, comme l’a dit Jean Monnet, l’Europe est une vallée de larmes…* (France Inter, Journal du 7–9h, 19 juin 2005)

Avec cette question de la polysémie de Si conditionnel, je suis déjà entré dans ce que Wilmet (1997 : 531) appelle « le maquis des circonstanciels. » Comme je l’ai dit, j’ai tenté de réduire ce maquis par une lecture polyphonique, mais sans prétendre tout ramener à cette valeur\textsuperscript{23}.

Pour Wilmet, le maquis en question ne concerne pas que le Si circonstanciel, mais les circonstanciels en général, et surtout le problème de leur lien à la prédication, autrement dit le fait qu’ils soient ou puissent être nucléaires ou facultatifs ; et que ces derniers puissent être intra- ou extra-prédicatifs, suivant qu’ils sont ou non mobiles ou détachés (exemples de Wilmet op. cit. : 560)\textsuperscript{24} :

(9a) *Pierre n’est pas parti sans que Marie le sache.*

\textsuperscript{22} Lors d’un séminaire où cet exemple a été présenté et discuté (janvier 2006), il m’a été fait remarquer que *l’Europe est une vallée de larmes* tout court induit une lecture polyphonique, qui relève d’une énonciation « empruntée » (sentencieuse, métaphorique).

\textsuperscript{23} Pour Ducrot (1984 : 108), *S’il fait chaud, il y a de la bière au frigo* n’est pas implicative au sens où elle « ne subordonne pas l’existence de la bière à l’hypothèse de la chaleur », mais elle est bien « sous condition » en ce qu’elle « présente l’assertion de cette existence comme justifiée par l’hypothèse : “Je te parle pour le cas où.” » Autrement dit, l’assertion Q qui supporte ou suppose l’acte de parole (*S’il fait chaud, alors je t’infore qu’il y a de la bière au frigo*) n’est pas incompatible avec la présentation « conditionnelle » ou éventuelle de contenus P (événement).

(9b) Marie ne pouvait pas ignorer le départ de Pierre. (intraprédicatif)

Ou :

(9c) Marie ignorait tout du non départ de Pierre. (extraprédicatif)

Je citerai alors dans la même veine, en revenant à l’hypothétique, ces exemples de Si P circonstancielles :

(10a) Paul viendra si Marie l’invite. (Charolles 2003 : 16)²⁵

(10b) Je viendrai si j’ai le temps. (Vogüé 1992 : 136)²⁶

3.2. Mais dans ce maquis des circonstancielles, je suis entré avec prudence et j’avance à petits pas. Une étape intermédiaire a consisté notamment à étudier un étrange parallélisme, que je souligne :

(11) Si tu le touches (P), il te demande pendant un kilomètre de temps (P’) si tu le touches vraiment. (J.-M. Koltès, La nuit juste avant les forêts)

S’il y a incontestablement une identité formelle et logique (entre P et P’ non assertives), il n’est pas syntaxiquement et sémantiquement possible de confondre la circonstancielle hypothétique (éventuelle), antéposée, extraprédicative, et la percontative, intraprédicative, argumentale. Ceci dit, si je sors ainsi du maquis des circonstancielles (elles-mêmes intra- et

²⁵ « Dans [10a], la subordonnée n’occupe pas une position argumentale (privilege des si percontatifs). Le fait qu’elle apparaisse après la principale favorise cependant une lecture intraprédicative dans laquelle elle est le foyer de la phrase. Dans cette lecture, [10a] répond à la question À quelle condition Paul viendra-t-il ? et la négation ne porte ni sur la protase ni sur l’apodose mais sur leur relation (Paul ne viendra pas si Marie l’invite mais si Jean l’invite) » (Charolles, art. cité ; je souligne).

²⁶ « Si P a le statut énonciatif de prédicat. Et il s’interprète comme une condition qui peut ne pas être suffisante (il faut aussi que je n’aie pas d’empêchements imprévus) mais qui est donnée comme nécessaire : si je n’ai pas le temps, je ne viendrai pas » (Vogüé, art. cité).
extraprédictives comme on a pu le voir avec l’exemple de Charolles), c’est pour entrer dans le maquis des compléments nucléaires ou non, objets ou circonstanciels.

3.3. J’en suis ainsi arrivé à lier cette question de la polyvalence fonctionnelle et syntaxique de Si à celle de sa polysémie, d’une part en tombant sur des cas du type (11), d’autre part parce que ces cas de confusion syntaxique entre percontative et circonstancielle me semblaient pouvoir être expliqués par la continuité logico-sémantique qui existe entre interrogation et hypothèse. Toutes deux participent donc de la suspension de la valeur de vérité de la proposition (du coup non assertive) ; en d’autres termes, elles ouvrent aux mondes possibles via l’éventualité et l’alternative, avec leurs nuances :

- Si P, Q implique que la réalisation de Q est liée (corrélée) à la vérité supposée en P (plutôt d’ailleurs qu’à l’éventualité « non » P : cf. exemple 2a).

- Est-ce que P implique que P et « non » P sont envisageables :

(12) _Il faudra penser à aller vérifier si l’orme qui pousse devant l’église Saint-Gervais, dans le 4e arrondissement, est mort ou non. En juillet, il semblait l’être._ (A. Lompech, _Le Monde_, Premiers signes d’un réveil de la nature, 10 février 2006)

Donc, la question ou l’alternative laissent la perspective ouverte (comme on parle de question « ouverte ») : ce peut être _oui_ ou _non_. L’hypothèse est une projection ou un pari sur l’éventualité positive (plus rarement négative) ouverte par l’alternative. En ce sens, l’hypothèse est une réponse possible, ou encore, discursive et dialogiquement parlant, une suite possible donnée à la question — comme cette Si P de reprise qui a bien une valeur de condition :

(13) _Qu’est-ce que tu feras s’il y a du verglas ? — S’il y a du verglas, je resterai chez moi._ (Vogüé 1992 : 138)

Wilmet en fait la « synthèse » (op. cit. : 488–491).
Autrement dit Si, P est ici une réponse à la question, mais contrairement à une réponse du type « oui vs non Q », Si P laisse la valeur de vérité en suspens, comme dans la question.

Je vais maintenant continuer d’explorer les marges de la condition, ou la condition aux marges de l’interrogation, avec d’autres cas.

4. Nouvelles marges et confusions

Un cas à envisager particulièrement, aux marges qu’on n’a pas encore explorées, est celui des Si P conditionnelles interrogatives (je ne dis pas circonstancielles dans la mesure où elles ne sont pas des compléments détachés et facultatifs d’une prédication principale) :

(14) Cette architecture [d’inspiration italienne] a l’inconvénient d’être en désaccord avec le climat. Si l’on pouvait du moins, pendant les hivers de Bohême, mettre ces palais italiens en serre chaude avec les palmiers ? (Chateaubriand, Mémoires d’Outre Tombe, Visite de Prague)

(15a) Abderrahmane, Martin, David... / Et si le ciel... était vide ? (A. Souchon, Abderrahmane, Martin, David, 2005 ; points de suspension de l’auteur)

(15b) Tant d’angélus... qui résonnent... / Et si en plus, y’a personne... (Ibid.)

Le premier exemple présente une Si P, qui pour être sans aucun doute hypothétique, est dé- ou non corrélée (Q zéro), qui plus est interrogative. La différence, maintenant, entre les deux derniers exemples, tient à la présence vs à l’absence de marque interrogative. On remarquera en outre la présence en (15b) du connecteur Et devant Si P ; de la sorte, celle-ci entre en relation avec un co-(n-)texte, dont on ne sait rien, mais qu’on imagine : il me semble en effet qu’on puisse et même qu’on doive restituer un débat dont on aurait ici (de la part du chanteur) la conclusion (provisoire) en forme de supposition.

\[\text{Le premier exemple présente une Si P, qui pour être sans aucun doute hypothétique, est dé- ou non corrélée (Q zéro), qui plus est interrogative. La différence, maintenant, entre les deux derniers exemples, tient à la présence vs à l’absence de marque interrogative. On remarquera en outre la présence en (15b) du connecteur Et devant Si P ; de la sorte, celle-ci entre en relation avec un co-(n-)texte, dont on ne sait rien, mais qu’on imagine : il me semble en effet qu’on puisse et même qu’on doive restituer un débat dont on aurait ici (de la part du chanteur) la conclusion (provisoire) en forme de supposition.}\]

\[\text{Il faut en outre souligner l’aspect dialogique des interpellations du premier vers, et au deuxième et au dernier vers, celui des Et Si P (sans Q) dont la fonction est, aussi, logico-argumentative : supposition à l’intention d’autrui d’un fait non vérifié, qu’on l’invite à vérifier.}\]
Quant à la forme interrogative de Si P en (15a), elle est argumentative :

(15c) *Es-tu d’accord avec moi pour supposer P ?*

On retrouve donc là, avec une Si P hypothétique interrogative, ce que dit Wilmet (1997 : 555) de la percontative : « Le propre de *si* interrogatif est de subordonner la valeur de vérité à celle de la réponse sollicitée (…) *si* projette en filigrane l’énoncé de signe inverse [+ ou -] »

Et Wilmet (ibid.), ajoutant : « Peu importe le verbe matriciel », propose ces exemples :

(16a) *Marie demande si Pierre viendra.*

(16b) *Imagine si Pierre a été content !*

(16c) *Tu sais si je l’aime.*

(16d) *Si j’osais…*

(16e) *Si je t’aime !*

En réalité, on ne trouve pas chez Wilmet (op. cit.) de zone de confusion, ou de réflexion sur des confusions possibles, mais un très remarquable rassemblement des fonctions et des valeurs qui fait penser à Moignet (1981) dans le passage du complétif interrogatif (16a) au complétif quantifiant (16c). Pour Moignet d’ailleurs, il n’existe qu’un Si « intégrateur de phrase avec une valeur de degré relatif » :

(17a) *Si c’est beau !*

(17b) *Tu sais si c’est beau !*

(17c) *Je ne sais pas si je viendrai.*
Pour moi, c’est (16b) qui fait problème, car on ne sait s’il est interrogatif ou quantifiant. Je préfère pour ma part me pencher sur la confusion que suscite l’exemple suivant, qui est un appel à l’imagination et à la vérification :

(18a) Voyez si ce nuage ne se dessine pas en forme de dragon. (Jules Verne, L’Île à hélices)

En effet, pour moi, (18a) se paraphrase en :

(18b) N’est-il pas vrai que P ?

Plutôt qu’en :

(18c) Est-ce que P ?

Autrement dit :

(18d) Vérifiez si P = (18e) Vérifiez l’hypothèse P = (18f) L’hypothèse P n’est-elle pas vraie ?

Ainsi la Si P percontative est aussi imaginaire et donc aussi peu véridictive que les précédentes Si P hypothétiques interrogatives (de contenu non vérifiable, mais à vérifier)…

5. Pour en sortir… par un compromis

Pour terminer, j’aimerais examiner un cas qui, me semble-il, devrait nous permettre de sortir, ne serait-ce qu’un peu, de cette confusion.

(19a) Je me demande si le PS ne deviendrait-il pas un parti stalinien ? (France Inter 28 février 2005, militante de la fédération PS du Nord, qui réagit par téléphone aux consignes de vote « oui » au référendum sur l’Europe, qu’elles reçues par lettre de P. Mauroy et M. Aubry)
En effet ce qui, à première vue, apparaît ici remarquable d’un point de vue syntaxique, c’est le cumul (i) d’une subordonnée Si P censée être percontative après le verbe qui l’introduit, et (ii) d’une interrogation directe. J’interprète pour ma part ce cumul des structures intégrative vs. non intégrative comme le besoin de dissocier sémantiquement hypothèse et interrogation, de telle sorte qu’elles apparaissent séparément, distinctement. Au-delà donc de ce que l’on pourrait hâtivement considérer comme une incorrection grammaticale, le phénomène de redondance (interrogations indirecte + directe) montre à mon sens que Si, tout autant qu’introducteur, lui-même, d’une complétive, est attaché au verbe de parole introducteur de l’interrogation — et cet attachement sémantique est en conséquence lexico-grammatical. On a effectivement la possibilité, d’un côté, d’une résomption anaphorique qui montrerait bien l’intégration de Si à la complétive :

(19b) Est-ce que P / Si P, je me le demande.  

Mais on pourrait avoir, d’un autre côté, un écho résomptif en « Si oui » qui montrerait à son tour le rôle argumentatif de la négation en (19a), qui détache cet introducteur du contenu propositionnel ou prédicatif P, et qui en outre lui donne un sens hypothétique :

(19c) Est-ce que P, je me le demande. Et si oui (P), alors…

(19d) Dans l’hypothèse où effectivement le PS deviendrait un parti stalinien…

On remarquera par ailleurs en (19a) l’emploi du conditionnel (si le PS ne deviendrait-il pas…) là où la norme sinon l’usage laisseraient attendre un présent ; mais ce conditionnel permet de revoir le statut syntaxique et sémantique de Si à rebours, c’est-à-dire lui (re-)donne un sens hypothétique là où il semble, aux grammairiens en tout cas, qu’il ne l’a pas ou ne l’a plus.

30 Voir les fameux mais supposés Si non hypothétiques dans des Si P concessives, oppositives, etc. (par exemple chez Lycan 2001).
Si on est d’accord avec cette analyse :

- On peut tout d’abord suivre Fournier (1998 : 351) et redire avec elle que :


Ou encore (Fournier 1998 : 172) :

Le parcours percontatif implique une issue ; le locuteur cherche à sortir de l’indéfinition et s’en remet à son interlocuteur pour sélectionner une valeur adéquate pour le terme en qu-. (Fournier 1998 : 172)

Plus loin (op. cit. : 352) elle ajoute plus précisément que le Si percontatif instaure une « sorte de débat sur la validité d’une assertion. » Cette citation met l’accent sur le fait d’une part qu’il y a bien une forme de dialogue, d’échange verbal entre deux locuteurs, d’autre part que c’est, comme dans la conditionnelle, la valeur de vérité de l’assertion qui est suspendue :

(19c) Et je suis dans l’incertitude si, pour me venger de l’affront, je dois me battre avec un homme, et le faire assassiner. (Molière in Fournier 1998 : 123)

- Mais, avant qu’il y ait dialogue sous la forme d’un échange de points de vue, ou demande d’une réponse à l’énoncé de son doute, il faut considérer aussi qu’en (19a), grâce au verbe de parole « se demander », un discours intérieur est exprimé, exposé et rapporté, par le fait même de l’énonciation, qui est un se dire avant d’être un dire (Jaubert 2000).

On pourrait alors avancer que si le verbe qui supporte et provoque cet effet polyphonique, — il s’agit ici d’un dialogue de soi avec soi mais à haute voix donc rapporté à autrui, qui plus est à la radio ! —, alors le Si percontatif est dégagé31 de sa fonction interrogative, sinon complétive

31 En partie dégagé, car il ne devient pas autonome du point de vue de la syntaxe verbale.
d’ailleurs indissociable du sémantisme verbal, et se charge, comme on l’a
dit, d’indiquer plus distinctement l’ouverture de l’espace de l’incertitude et,
donc, l’entrée dans le monde du conditionnel, du non asserté :

(19f) *Je me demande : le PS ne deviendrait-il pas un parti stalinien ?*

L’expression d’un doute est donc aussi l’expression d’un débat de type
monologue intérieur32.

Pour finir on envisagera un dernier cas *intermédiaire*, celui où Si P est
une complétive introduite par un verbe de parole (ou de pensée) qui est en
même temps un verbe de savoir et de certitude ; autrement dit, en termes de
valeur de vérité et de cognition, la proposition principale introductrice est
plus qu’assertive, elle est épistémiquement une proposition qui affiche une
*attitude* de certitude, d’assurance :

(20a) *S’il vient ? Oui, je le sais.*

= 

(20b) *Je sais s’il vient (ou non).*

Pour y voir plus clair, ou vraiment clair, il faut faire la différence avec
Que P :

(20c) *Je sais qu’il vient.*

Vs.

(20d) *Je ne sais pas qu’il vient.*

(20e) *Je me demande qu’il vient.*

---

32 À ce propos, Nølke et al. (2004) distinguent trois degrés de structure polyphonique
(i.e. qui renferme un « point de vue posé ») : (i) la monotonie (*Il fait beau*) ; (ii) la
polyphonie interne (*Je me demande si…*) ; (iii) l’externe (*Dis-moi ce que j’ai mangé ce
matin, puisque tu sais tout*, où P est à attribuer à l’allocutaire).
On voit donc le rôle de Si percontatif : il ne concerne pas seulement le mode du savoir, son rapport au verbe de parole ou épistémique, mais la présentation, voire le partage de ce savoir. Du coup sa valeur proprement percontative est effacée et rejoint la circonstancielle. Et ce dernier Si semble bien emprunter aux deux Si : interrogatif et circonstanciel. On voit alors le rôle également argumentatif et dialogique de ce Si :

(20f) *Tu sais s’il vient ? Oui, il vient, je le sais (= ± Oui, je sais qu’il vient, il me l’a dit.)*

Vs.

(20g) *Tu sais s’il vient ? Oui, je sais s’il vient.*

En termes de *coopération*, il n’y a pas ou plus, alors, de recherche commune, partagée, d’une issue.

6. Conclusion générale

J’ai voulu montrer qu’il existe bien, parmi les Si P, des *monstres linguistiques* qui tiennent du percontatif et de l’hypothétique. Ces *monstres*, dont on a pu souligner la fonction d’exhibition, et qui, ainsi, méritent bien leur nom, fréquentent ces zones, qu’on a dites de *confusion*, où l’on hésite entre deux interprétations :

(20h) *S’il vient, j’aimerais bien le savoir.*

Avec une intonation ascendante, cette Si P antéposée est une question de reprise, en écho, et vraisemblablement topicalisée :

(20i) *S’il vient ? J’aimerais bien le savoir.*

---

Sinon, cette Si P peut être une hypothétique :

(20j) Au cas où il est effectivement là, j’aimerais qu’il ou qu’on me le dise, qu’il ou qu’on me prévienne.

On peut expliciter et paraphraser la complémentarité des interprétations avec des Quand P (d’un côté effective, de l’autre interrogative) :

(20k) Quand il vient, je ne le sais pas.

(Il vient, mais je ne sais pas quand) →

(20l) Quand il vient ? Je ne le sais pas.

Références


DE L’EXTRA- A L’INTRAPREDICATIF : POLYVALENCE DE SI ?


Delaveau, Annie (1990) La conjonction si dans ses emplois interrogatif et conditionnel en français moderne. Thèse d’état, Université Paris VII.


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Abstract

The purpose of the paper is three-fold: (i) to review previous analyses of ambiguity and point out their merits and problems, (ii) to devise a formalized system of ‘Integrated Ambiguity Analysis Model (IAAM),’ which accounts for ambiguity detection, representation and optimal meaning selection, and (iii) to apply the IAAM to examples of English jokes, slogans, and literary works as well as Chinese/Japanese Zen kōan samples in order to show the model’s practicality and general applicability. Unlike the previous analyses, the IAAM accounts for intended ambiguities and produces the following three major results. First, the Ambiguity Detection together with the Shared-Knowledge Parameter accounts for the detection procedure of ambiguous expressions. Second, the Integrated Ambiguity Representation provides a unified phonetic/phonological, syntactic, semantic and pragmatic representation of ambiguous expressions. Finally, the Optimal Meaning Detector together with the Shared-Knowledge Parameter establishes a systematic optimal meaning selection procedure and its application to concrete examples in English and Zen kōans, thereby not only contributing towards opening the door to the integrated linguistic analysis of intended ambiguity but also helping enhance a study of the linguistics-literature interface.

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1. Introduction

1.1 Scope, object and objectives of the study

Ambiguous expressions can be divided into two types: unintentional and intentional. The first type includes the erroneous, confused, or careless use of language, while the latter includes the deliberate and skillful use of words and expressions in order to attract attention or to persuade the reader/listener. Therefore, the second type of ambiguity reflects the author’s/speaker’s intention to accomplish a specific purpose or aim as in puns, quibbles, slogans, jokes, poetry, prose, and parables. The object of this study is confined to intended ambiguities in written form.

The purpose of this paper is three-fold: (i) to review previous analyses of ambiguity and point out their merits and problems; (ii) to devise a formalized system of ‘Integrated Ambiguity Analysis Model (IAAM),’ which accounts for ambiguity detection, representation, and optimal meaning selection; and (iii) to apply the IAAM to examples of English jokes, slogans, and literary works as well as Chinese/Japanese Zen kōan samples in order to show the model’s practicality and general applicability.

The critical review of previous ambiguity analyses not only duly evaluates their contribution but also points out theoretical as well as technical problems. The previous analyses which will be discussed in this paper include analyses in the framework of Generative Grammar (see Huang 1995; Radford et al. 1999), Categorial Grammar (see Dowty et al. 1981), Head Driven Phrase Structure Grammar (see Asudeh and Crouch 2001), Functional Grammar (see Bloor and Bloor 1995), and Experience-based Model (see Sturt et al. 2003). It will be shown that although the previous analyses have accounted for the connection between semantics and syntax in ambiguity resolution, all were insufficient in three respects: (i) they were confined to the analysis of out-of-context examples, (ii) they failed to offer a method of ambiguity detection and optimal meaning selection, and (iii) they also failed to provide an integrated system for ambiguity detection, representation, and optimal meaning selection.

1 A kōan (公案 in Chinese characters) is “an artificial problem given by a Zen master to a student with the aim of precipitating a genuine religious crisis that involves all the human facilities—intellect, emotion, and will (Hori 2003: 6).” Zen kōans are full of intentional ambiguities. Therefore, some representatives are analyzed in this study.
1.2 What is ambiguity and why does it emerge?

An ambiguous expression can be defined as a word/phrase/sentence which allows two or more interpretations in a given context. An ambiguous word or expression should not be confused with a ‘vague’ expression, which results when a speaker’s/author’s intention is not clearly phrased due to the imprecise articulation of thought or feelings.

The inquiry into why ambiguities emerge is not new. Aristotle thought that

an ambiguity arises because the number of items that form vocabulary of any human language is much smaller than the number of realities that the vocabulary items are supposed to depict to make the human language meaningful and functional. In other words, reality is much more complex than language, its demand is, so to speak, always higher than supply in words that we use to denote it (Pehar 2001: 4).

Therefore, the referential relation between vocabulary items/expressions and objects we see in reality as well as in our mental world is bound to be a one-to-many relation. While Aristotle deserves credit for producing one half of the truth, the other half goes to Pehar (2001: 5), who criticizes Aristotle’s assumption: It is a normal and recurring phenomenon we produce by adding new meanings to words, therefore it is not a symptom of representational insufficiency of language but rather ambiguities show a creative aspect of language. It is not surprising therefore that we see ambiguity noticeably in creative literary works such as poetry, novels, and plays. As we shall see in section 4 of this paper, Zen kôans are full of deliberate ambiguous expressions, which were skillfully created to help the students of Zen attain absolute realization or enlightenment.

1.3 Classification of ambiguities

Ambiguities can be classified into three types: syntactic, semantic, and pragmatic as shown in (1). (The classification of ambiguities facilitates the definition of ambiguity detection as explained in section 3.1.)
(1) Classification of ambiguities

\[
\text{Ambiguities} = \begin{cases} 
\text{syntactic} \\
\text{semantic (lexical, scopal)} \\
\text{pragmatic/referential}
\end{cases}
\]

Syntactic ambiguities result when a phrase/clause/sentence allows more than one way of grouping its constituents. The sentence *Frank spotted the man with a telescope* yields at least two distinct interpretations: (i) Frank looked through a telescope and spotted the man, and (ii) The man has a telescope and Frank spotted him (see Radford et al. 1999: 358). The first interpretation is attributable to the labeled bracketing of (2a) whose corresponding tree diagram is (2b), while the second interpretation is attributable to the labeled bracketing of (2c) whose corresponding tree diagram is (2d). Therefore, the two distinct groupings of constituents result in the different meanings.

(2) *Frank spotted the man with a telescope.*

a. \[ [\text{VP spotted} \ [\text{DP the man}] \ [\text{PP with a telescope}]] \]

b.  
```
     VP
    /   
   V    PP
  /     
 DP    PP
|      |
spotted the man with a telescope
```
c. \[ [\text{VP spotted} \ [\text{DP the man}] \ [\text{PP with a telescope}]] \]

d.  
```
     VP
    /   
   V    PP
  /     
 DP    PP
|      |
spotted the man with a telescope
```

Semantic ambiguities consist of two kinds: lexical and scopal. Lexical ambiguities include homonyms, heteronyms, and homographs.
Homonymous words share the same pronunciation but differ in spelling, while heteronymous words share the same pronunciation and spelling. Consider examples in (3). Here, the first pair of underlined words, flour and flower are homonyms, whereas the second pair of words ground and ground are homographs.

(3) “How is bread made?”
“I know that!” Alice cried eagerly.
“You take some flour—”
“Where do you pick the flower? The White Queen asked. “In a garden, or in the hedges?”
“Well, it isn’t picked at all,” Alice explained; “it’s ground—”
“How many acres of ground?” said the White Queen.

(Lewis Carroll, Through the Looking-Glass)

On the other hand, heteronyms are words spelled the same but pronounced differently as in the following example: ‘bass [beɪs], meaning either ‘low tone’ or ‘bass [bæs], a kind of fish (Fromkin et al. 2003: 584).”

Scopal ambiguities arise due to the different interpretations of quantifier scopes. For example, the sentence in (4) is two-way ambiguous between the wide scope reading of a universal quantifier as in (4a), and the wide scope reading of an existential quantifier as in (4b) (see Larson and Segal 1995: 250). Notice that (4c) exemplifies (4a), while (4d) instantiates (4b).

(4) Every man admires some woman.
   a. For every man $x$, for some woman $y$, $x$ admires $y$
   b. For some woman $y$, for every man $x$, $x$ admires $y$
   c. Every–some
      Chris $\rightarrow$ Kate
      Phil $\rightarrow$ Jill
      Rolf $\rightarrow$ Kumiko
d. Some–every
      Chris $\rightarrow$ Kate
      Phil $\rightarrow$ Jill
      Rolf $\rightarrow$ Kumiko

Pragmatic (referential) ambiguities occur when an expression is not specific, and the context where it occurs does not provide details for clarifying the meaning of the expression. Therefore, further information is
necessary in order to resolve a pragmatic ambiguity (see Walton 1996). An example of pragmatic (referential) ambiguity is given below.

(5) Example (Pehar 2001: 2):

Croesus, an ancient king of Lydia, asked the oracle at Delphi to prophesize the outcome of his attempt at conquering the Persian Empire. The oracle, as clever as always, issued the following prophesy: “If you attacked the Persians, you would destroy a mighty empire.”

The underlined phrase ‘a mighty empire’ allows at least three interpretations as shown in (6).²

(6) a. the empire of Persia
   b. the empire of Lydia
   c. some other empire

Pehar (2001: 3) claims that

the noun phrase ‘a mighty empire’ if taken out of context carries just one sense: (i) a militarily powerful, or (ii) jurisdiction ruled over by a king. However, the phrase under consideration is ambiguous in the following two respects: (i) there are more than one mighty empire under discussion, and (ii) which mighty empire is being referred to?

Pragmatic ambiguities can be cross-sentential or cross textual. Pehar (2001: 4) explains that

this type of ambiguity [i.e. cross-textual] rests not on a separate phrase or on a sentence, but on a larger body of a text comprising many sentences. An example of this type would be a referential/anaphoric expression which is referred to, for

² Another possible interpretation, ‘either the empire of Persia or the empire of Lydia’ was pointed out to me by a participant in SKY Symposium “Structure and Context” organized by the Linguistic Association of Finland, August 21–22, 2006, Åbo Akademi University (Turku, Finland). Although the above interpretation is logically possible, it is irrelevant at the time of processing the text as a whole. The ambiguous phrase in question ‘a mighty empire’ is a proposition thrust before Croesus and the reader, which calls for the choosing of one particular empire among the three alternatives: the Persian Empire, the Lydian Empire, and some other empire. Therefore, the alternative interpretation is eliminated from the optimal meaning selection as we shall see in section 3.3.
example, in sentence A as $\alpha$; in sentence B, as $\beta$; and in sentence C, as $\gamma$, etc., where all of the sentences are cohesive and comprise a text.

The above exposition has answered three questions: (i) what is ambiguity?, (ii) why does ambiguity result?, and (iii) how are ambiguities classified? Let us now examine previous ambiguity analyses and consider their strong point and problems.

2. Previous analyses

In the early days of Generative Grammar, Chomsky (1965) created two innovative devices. One is the tree-diagram representation, and the other is the corresponding labeled bracketing representation. In terms of these devices, a distinct structural representation can be associated with each of the different interpretations of an ambiguous expression. The PP attachment ambiguity given under (2) in section 1.3 is an example of the tree-diagram representation. As for a representative of the labeled bracketing representation, we consider Huang’s (1995) analysis. Within the framework of the Government and Binding, Huang analyzes the scope ambiguity of Everyone loves someone in terms of the Quantifier Raising, which Chomsky-adjoins a quantified NP to IP, leaving a trace A’-bound by the adjoined NP, thereby yielding the syntactic structures (7a) and (7b), respectively. The corresponding semantic representations are shown in (7c) and (7d), respectively for heuristic purposes.

(7) Everyone loves someone.
   a. \([IP \text{Everyone} [IP \text{someone} [IP t_i \text{loves} t_j]]]\]
   b. \([IP \text{Someone} [IP \text{everyone} [IP t_i \text{loves} t_j]]]\]
   c. $\forall x \exists y \text{[love} (x,y)]$
   d. $\exists y \forall x \text{[love} (x,y)]$

Asudeh and Grouch’s (2001) HPSG analysis of scope ambiguity is quite different from the one discussed above. According to their analysis, the lexical entries at syntax-semantics interface for every, student, and solves are provided as the initial step as illustrated in (8a), (8b), and (8c), respectively.\(^3\)

\(^3\) See Lasnik and Uriagereka (1988: 7), and Aoun and Li (1993: 25) for analogous analyses.
(8)

a. "EVERY"

CAT  | HEAD  | SPEC N':
     | det   | [3] [PERSON 3rd]
     |       | [ref NUMBER sing]
     | VAR-RES [1] | [3] [head-RES [3]]
     | RESTR-RES [2] | [1] [var-RES]

GLUE  <λP.λQ.∀x.[P(x)→Q(x)];([1]→ [2])→ ([3]→ G)→ G> 

b. "STUDENT"

CAT | HEAD  | noun
     |       | [PERSON 3r]
     |       | [ref NUMBER sing]
     | VAR-RES [1] | [1] [head-RES ref]
     | RESTR-RES [2] | [2] [var-RES]

GLUE  <λx.student(x);[1]→ [2]> 

c. "SOLVES"

HEAD  | VFORM fn
     | [4] [head-RES [3]]
     | [ref] [PER 3rd]
     | [ref] [NUM sing]
     | [1] [head-RES]
     | [2] [solver]
     | [3] [solved]

GLUE  <λy.λx.solve(x,y);[3]→ ([2]→ [1])>
Granting that the lexical specifications for the words *a* and *problem* are given analogously as in the case of *every* and *student*, the partial lexical entries for the sentence, *Every student solves a problem* is provided as shown in (9).

(9)

\[
\begin{align*}
\text{CONT} & \backslash \text{HEAD-RES } [1] \\
\lambda P. \lambda Q. \forall x. [P(x) \rightarrow Q(x)]: ([4] \rightarrow [5]) \rightarrow ([2] \rightarrow G) \rightarrow G), \\
\text{GLUE} & \\
\lambda y. \text{student}(y): [4] \rightarrow [5], \\
\lambda y. \lambda x. \text{solve}(x, y): [3] \rightarrow ([2] \rightarrow [1]) \\
\lambda P. \lambda Q. \exists x. [P(x) \land Q(x)]: ([6] \rightarrow [7]) \rightarrow ([3] \rightarrow H) \rightarrow H), \\
\end{align*}
\]

The generalized determiner *every* in (9) contains \( ([4] \rightarrow [5]) \rightarrow ([2] \rightarrow G) \rightarrow G \), which corresponds to the standard Montagovian type for generalized determiners, \(<<e, t>, <<e, t>, t>>\). The determiner *every* consumes the N’ semantics, i.e. \( ([2] \rightarrow G) \rightarrow G \) to produce a generalized quantifier semantics as illustrated in the subproof in (10).

(10) \( \lambda y. \text{student}(y): [4] \rightarrow [5] \lambda P. \lambda Q. \forall x. [P(x) \rightarrow Q(x)]: ([4] \rightarrow [5]) \rightarrow ([2] \rightarrow G) \rightarrow G) \)

\[
\lambda Q. \forall x. [\text{student}(x) \rightarrow Q(x)]: ([2] \rightarrow G) \rightarrow G
\]

Given a similar subproof for *a problem*, the two distinct scope readings for the sentence, *Every student solves a problem* can be derived as shown in (11) and (12), where the former represents the wide scope reading of an existential quantifier, whereas the latter, the wide scope reading of a universal quantifier.
Within the framework of Categorial Grammar, Dowty et al. (1981: 208) analyze the two interpretations for the sentence, *Every man believes that a fish walks*: (i) a belief about one particular fish shared by every man, and (ii) beliefs about possibly different fish for each man. The first interpretation is associated with the analysis tree in (13a), whose translation is shown in (13b), whereas the second interpretation is associated with the analysis tree in (14a), whose translation is (14b). Here, the Arabic numerals at the right of the higher nodes denote the numbers of the structural operations, while the items with the same subscripted number are anaphoric. Notice that the two interpretations are accounted for in terms of the two distinct analysis trees.
In Sturt et al.’s (2003) Recursive Neural Network analysis under Computational Experience-based Model, a PP attachment ambiguity such as in (15) is assigned two different incremental trees: (15a) and (15b). On the basis of the two incremental trees, they offer a device for determining which interpretation is preferred in terms of frequency. The conventions used here are as follows: NN means singular or mass common noun; VBD denotes past tense verb; and IN signifies preposition. Here, (15a) represents the reading in which the spy has the binoculars, while (15b) represents the reading in which the cop has the binoculars. The dotted loops enclosing the configurations were used to search the frequencies of the two constructions in corpora such as the Penn-treebank database and Wall Street Journal.
The spy saw the cop with the binoculars.

a. Verb phrase attachment

b. Noun phrase attachment

According to Sturt et al.’s analysis, the noun phrase attachment reading is ranked above the verb phrase attachment reading therefore preferred as shown in (16). They also claim that the statistical analysis for the replication networks shows that the NP attachment preference is reliable: The mean for NP attachment is .64, whereas it is .26 for VP attachment, where $T(N=20)=24, p < .05$.

<table>
<thead>
<tr>
<th>Probability estimate</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP attachment</td>
<td>.49</td>
</tr>
<tr>
<td>VP attachment</td>
<td>.39</td>
</tr>
</tbody>
</table>

Within the framework of Functional Grammar, Bloor and Bloor (1995: 138) analyze ambiguous noun phrases such as ‘a Spanish teacher’ as follows:

In one interpretation, the word Spanish is analyzed as ‘Epithet’ meaning that a teacher has Spanish nationality; whereas in the other interpretation, the word
Spanish is analyzed as ‘Classifier’. In the former case, the characteristic or quality of being Spanish is at issue, while in the latter case what is at issue is a teacher belonging to a subclass of teachers, namely Spanish (language) teachers, as distinct from science teachers, mathematics teachers, and so on.

They claim without elaboration that when such ‘ambiguous’ expressions occur in real utterances, there is rarely any confusion about meaning. The context usually provides sufficient information to make it clear what is intended. Furthermore, in spoken English, the distinction between Epithet and Classifier is often reflected by differences in intonation.

All of the above five previous analyses commonly share three shortcomings: (i) their analyses were confined to out-of-context examples; (ii) they failed to provide a method of selecting an optimal interpretation from a set of possible interpretations; and (iii) they failed to offer an integrated model for detection, representation, and optimal meaning selection, which incorporates phonological, morphological, syntactic, semantic, and pragmatic properties into one unified system. Although lacking elaboration, Bloor and Bloor’s claim discussed above is worth noting since it acknowledges the importance of taking context into consideration in ambiguity analyses. By conducting a context-oriented analysis, one can expand the horizon of ambiguity analysis. Moreover, a context-oriented ambiguity analysis can go beyond context-independent analyses and enables us to carry out the selection of the optimal meaning from a set of perceived interpretations.

With the above development in mind, the definition of perceived ambiguity is formalized in (17) on the basis of Poesio (1996: 166).

(17) Definition of perceived ambiguity

An expression E with encoded message in a discourse situation is perceived as ambiguous by a listener/reader (L/R) if the L/R obtains two or more interpretations for E.

In recognizing an ambiguity, a competent speaker produces interpretations conforming to grammatical conditions in a given context/situation. Therefore, Poesio (1996: 177) proposes a constraint shown in (18).
Anti-Random Hypothesis (Informal)

Humans do not randomly generate alternative interpretations of ambiguous sentences; only those few interpretations are obtained that (i) are consistent with syntactic and semantic constraints, and (ii) are suggested by the context.

Acknowledging the indispensability of context, the next section advances a unified system of ambiguity analysis in a principled fashion.

3. Integrated Ambiguity Analysis Model (IAAM)

I have devised a unified system of ambiguity detection, representation, and optimal meaning selection, which is designated as an Integrated Ambiguity Analysis Model (IAAM). The IAAM can be formalized as a quadruple as shown in (19). It will become clear shortly that the IAAM is formulated in a generalized fashion, therefore it can be incorporated into other current models of grammar or those which are under development. ⁴

(19) Integrated Ambiguity Analysis Model (IAAM)

\[ \text{IAAM}=({SKP, AD, IAR, OMD}) \]

The initial component, \( SKP \), denotes ‘Shared-Knowledge Parameter,’ which is prerequisite for the mutual understanding between the author/speaker and reader/listener. The second component, \( AD \), signifies ‘Ambiguity Detection,’ which specifies a method of detecting an ambiguous expression in a given context. The third component, \( IAR \), denotes ‘Integrated Ambiguity Representation,’ which provides a unified method of ambiguity representation: phonetic/phonological description, interpretation, and structural description at syntax-semantics interface. The last component signifies ‘Optimal Meaning Detector,’ which can be formalized as a triplet, \( OMD=(M, ME, \omega\text{-algebra}) \). The \( M \) designates a set of perceived meanings. The \( ME \) stands for ‘Meaning Evaluation,’ which is a set of criteria for judging which meaning is ‘optimal’ among a set of meanings.

⁴ The IAAM is a pioneering study opening roads for researchers who wish to unify phonetics/phonology, morphology, syntax, semantics, and pragmatics into an integrated system of ambiguity analysis. Being more comprehensive, the IAAM can improve on any theory that hinges on syntax-confined or semantics-confined approaches which attempt to analyze an ambiguous expression out-of-the-blue fashion without considering context or situation.
perceived meanings. The third component, $\omega$-algebra is a mathematical calculation device for selecting an optimal meaning. The chart given under (20) should help the reader understand how an integrated ambiguity analysis is executed in terms of the IAAM. The downward solid arrow shows a procedure for an integrated ambiguity analysis, while the dotted arrow shows the involvement of the parameter. The three elements of the OMD are shown in curly brackets at the bottom.

(20) IAAM flowchart

In the following subsections, we consider in detail each component of the IAAM beginning with a method of detecting ambiguous expressions called Ambiguity Detection.

### 3.1 Ambiguity Detection

Detecting an ambiguity is an intellectual challenge, which oftentimes requires keen insight and extensive knowledge of the subject matter involved. In this connection, Lecleric’s (2004) comment is suggestive. Referring to Wittgenstein’s (1967) ambivalent duck-rabbit figure, he states that human perception is fundamentally interpretive since our observations are organized by background theories and concepts, experience, language, and in general, our entire past. For example, if someone has never seen a rabbit he/she will never identify the duck-rabbit figure as a rabbit. (Lecleric 2004)
In this respect, shared-knowledge is indispensable not only for the mutual understanding between the speaker/author and the listener/reader in everyday discourse but also in ambiguity analyses. Here, the term ‘knowledge’ is used to mean ideas, beliefs, concepts and conceptions, as well as visual sensations, auditory sensations, sense of touch, and sense of taste. Acknowledging the significance of shared knowledge, I put forward the following proposition.

(21) **Shared-Knowledge Parameter (SKP):**

Let there be

- $K^a$: author’s/speaker’s knowledge,
- $i$: author’s/speaker’s intended ambiguity,
- $e$: expression in which $i$ is encoded,
- $K^r$: reader’s/listener’s knowledge,
- $r$: reader’s/listener’s interpretation of $e$, and
- $K^a \cap K^r$, where $e \in K^a$ and $e \in K^r$.

If $r = i$ or $r \approx i$, then an ‘ambiguity detection’ can be arguably carried out.

Bearing the **SKP** in mind, a method of ambiguity detection can be formalized as shown in (22).

(22) **Ambiguity Detection (AD):**

Let there be $[\alpha, c_1, c_2, c_3, \ldots, c_m]$, where $\alpha$ is a variable ranging over a sentence, paragraph, and whole text, whereas $c$ is a constituent. As you incrementally process words, look for a possible ambiguous constituent $c_i$ which allows two or more meanings in terms of the following three methods.

a) Do a syntactic analysis in order to find an alternative grouping of constituents;

b) Do a semantic analysis in order to find a homonym, heteronym, homograph, or an alternative quantifier scope interpretation; and

c) Do a pragmatic analysis in order to find an alternative referential interpretation.

Allow a simultaneous amalgam of two or more competing interpretations and continue the analyses until you find no more alternative interpretations.

---

5 In formalizing the Ambiguity Detection, I have borrowed Norvig’s (1988: 2) idea of the methodological procedure in ambiguity interpretation strategy. Norvig’s interpretation strategy, however, neither provides a detailed ambiguity detection method nor offers its application to ambiguous expressions taking context into consideration.
Let us now show how the AD works taking examples from two types of ambiguities: one-at-a-time ambiguity and simultaneous ambiguity. Consider first a one-at-a-time ambiguity example in (23). Notice that the sentence in question allows two interpretations: (23a) and (23b).

(23) He chased elephants on horseback.
    a. He chased elephants while he was on horseback.
    b. He chased elephants which were on horseback.

In (23a), the prepositional phrase, ‘on horseback’ gives rise to a conveyance reading, while in (23b) the prepositional phrase acts as a modifier to the noun, ‘elephants’. The second interpretation stands out if a relevant context is provided as in (24).

(24) FRIP: When my father was in Africa, he chased elephants on horseback.
     FRAP: Gee, I didn’t know elephants could ride horses.
     (Rissinger and Yates 1996: 43)

Consider next a simultaneous ambiguity example given under (25).

(25) We are Flintstones kids, ten million strong and growing.

Norvig (1988: 4) asserts that

the coordinate and growing can attach to either are or ten million strong, with the respective interpretations that the individual children are growing, or that the number of children is increasing. Most informants recognize both alternatives, but report an ability to fuse the two into a single image where each individual child in an expanding group is growing. But in (27) [here (25)] we have a special kind of pun, where the point is that both meanings are to be taken simultaneously.

3.2 Integrated Ambiguity Representation

As we have seen in the previous sections, ambiguity analyses involve all of the core components of grammar: phonetics/phonology, morphology, syntax, semantics, and pragmatics. In view of this fact, I have devised the ‘Integrated Ambiguity Representation (IAR),’ which provides fundamental grammatical information: a phonetic/phonological form, interpretation, lexical or syntactic category, syntactic structure, and if relevant a thematic role for a detected ambiguous expression.
Integrated Ambiguity Representation (IAR):

An ambiguous expression \( a \) detected by means of the AD is subject to the following two terms.

i. Each perceived meaning of \( a \) is assigned a distinct Integrated Ambiguity Representation (IAR), which consists of PHON (phonetic/phonological form), INT (interpretation), and SYN-SEM (syntax-semantics unified schema), and

ii. The IAR of \( a \) can be either Type 1 or Type 2 depending on the position of the head and its complement, where \([p]\) denotes phonetic/phonological form; \( i \) denotes \( a \)'s interpretation by paraphrasing; X, Y, and Z denote syntactic categories. If a thematic role of \( a \) is relevant, then it is specified in double angle brackets.

<table>
<thead>
<tr>
<th>Type 1</th>
<th>Type 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHON: ([p])</td>
<td>PHON: ([p])</td>
</tr>
<tr>
<td>INT: ( i )</td>
<td>INT: ( i )</td>
</tr>
<tr>
<td>SYN-SEM:</td>
<td>SYN-SEM:</td>
</tr>
</tbody>
</table>
|    \[
|     \[ X \]
|     \[ Y \]
|     \[ Z \]
|     \[<<\theta\text{-role}>>\]
|    \[ X \]
|    \[ Z \]
|    \[ Y \]
|    \[<<\theta\text{-role}>>\]          |                                            |

Given the above exposition, the two interpretations of example (7) are each assigned a distinct Integrated Ambiguity Representation (IAR).

(27) Meaning 1

PHON: [ɛvriwan ləvz samwan]
INT: \( \forall x \exists y \) [love \((x,y)\)]
SYN-SEM:

```
  S
 / \   \        / \  
DP   VP   DP   VP
   \  \  \  \    \  \  
  <<AGENT>>  <<THEME>>
  /   /  /   /  /
everyone loves someone
```
Meaning 2

PHON: [e:vri:wɑn ɪ:vz ɑm:wa]n
INT: ℰy∀x [love (x, y)]
SYN-SEM:

```
S                  
|                   |
V  VP               |
|      |              |
<<AGENT>> everyone |
                    |
|      |              |
<<THEME>> someone  
```

We shall now turn to the issue of selecting an optimal meaning among perceived meanings of an ambiguous expression in the next section.

3.3 Optimal Meaning Detector

The formulation of integrated optimal meaning selection from a set of perceived meanings is justified in three respects. First, it pioneers a method for singling out the best possible interpretation among a set of perceived interpretations. Second, not only does it unify phonetics/phonology, syntax, semantics, pragmatics/discourse analyses, but it also brings together the linguistic analyses and the reader’s inference$^6$ into a single whole in a systematic and principled fashion. Third, due to this linguistics-literature interface, it explores the frontiers of theoretical linguistics thereby providing a new insight into ambiguity analyses.

Of relevance to the above discussion is Relevance Theory (see Sperber and Wilson 1984; Wilson 1994; Wilson and Sperber 2004). As we shall see shortly, one of the basic assumptions of Relevance Theory (RT), ‘Principle of relevance’ is incorporated with a slight modification into ‘Meaning Evaluation’ defined in (28). However, other RT stipulations such as ‘Relevance to an individual (classificatory),’ ‘Relevance to an individual (comparative)’ and ‘Presumption of optimal relevance’ are inadequate for

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$^6$ Following Hobbs (1985), Asher and Lascarides (1995: 72) acknowledge the importance of the reader’s inference in correlating the segments of text because a wide variety of linguistic and discourse information is necessary to infer pragmatically the best-suited interpretation of a segment in a text.
the task of selecting an optimal meaning among a set of perceived meanings in jokes, slogans, literary works and Zen kōans due to their allusive, deceptive, and deliberately dubious techniques and styles.\footnote{Clark’s (1999: 353) idea of ‘layer’ bears a direct relevance to the interpretation of jokes, parables, and creative literary works. The layer analysis helps the reader obtain a deeper understanding of how discourse structure affects the meaning of words by explaining the dual or multiple layered domains of action worded in a written text or utterance.}

Following the most basic idea of Optimality Theory (see Prince and Smolensky 1993; Archangeli and Langendoen 1997; Kirchner 1998; Roca and Johnson 1999), I have devised a system of optimal meaning selection, by which the best possible meaning is singled out from a set of perceived meanings for an ambiguous expression. As discussed above, Optimal Meaning Detector (\textit{OMD}) is defined as $OMD=(M, ME, \omega\text{-algebra})$. The $M$ is a set of perceived meanings. The $ME$ stands for Meaning Evaluation, which consists of four criteria\footnote{The four criteria are contextually motivated as shown in the following chart.} for singling out an optimal meaning from a set of perceived meanings as defined in (28). A detailed explication of each criterion follows the definition of $ME$.

(28) Meaning Evaluation (ME)

Let there be $[\alpha…a…]$, where $\alpha$ is a variable ranging over a sentence, paragraph, and whole text, while $a$ is an ambiguous constituent which is subject to the following four criteria.

a. Text Criterion (TC): If a meaning, $m_i$, coheres\footnote{Here the term ‘cohere’ means to achieve the consistency and connectedness correlation between constituents in a sentence, or a set of sentences as in a paragraph, or a text as a whole, or an utterance/dialogue/speech in a well-formed fashion phonetically/phonologically, syntactically, semantically and pragmatically. See Asher and Lascarides (1995) for an analysis of how coherence is achieved in the analysis of anaphoric pronoun disambiguation in terms of a systematic and formal theory of lexical processing. The reader is also referred to Jurafsky and Martin’s (2000: 694) systematic} in $[\alpha…a…]$, then assign $m_i$ value 1, if not, 0;

<table>
<thead>
<tr>
<th>Contexts</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text context</td>
<td>Text Criterion (TC)</td>
</tr>
<tr>
<td>Recognition context</td>
<td>Relevance Criterion (RC)</td>
</tr>
<tr>
<td></td>
<td>Inference Criterion (IC)</td>
</tr>
<tr>
<td>Production context</td>
<td>Authorial Intent Criterion (AIC)</td>
</tr>
</tbody>
</table>

\begin{tabular}{|c|c|}
\hline
Contexts & Criteria \\
\hline
Text context & Text Criterion (TC) \\
Recognition context & Relevance Criterion (RC) \\
 & Inference Criterion (IC) \\
Production context & Authorial Intent Criterion (AIC) \\
\hline
\end{tabular}
INTEGRATED AMBIGUITY ANALYSIS MODEL

b. Relevance Criterion (RC): If \( m_i \) is declared optimal by Relevance Condition,\(^{10}\) then assign \( m_i \) value 2, if not, 0;
c. Authorial Intent Criterion (AIC): If \( m_i \) is in accord with the author's/speaker's articulated intent, then assign \( m_i \) value 3, if not, 0. If the authorial intent is not available, then assign \( m_i \) value \( 0 \); and
d. Inference Criterion (IC): If \( m_i \) is declared optimal by the Inference Condition,\(^{11}\) then assign \( m_i \) value 4, if not, 0.

account of text coherence by a set of coherence relations on the basis of inference and axioms.

\(^{10}\) The Relevance Condition of the RC is a pragmatics/discourse oriented rule, which I have formalized in (i) on the basis of Sperber and Wilson's (1984) 'Principle of relevance'.

(i) Relevance Condition: The optimal meaning is the one which is of immediate relevance to the reader/listener at the time of processing a text/message.
The basic four assumptions of Relevance Theory (Sperber and Wilson 1984), and the Cooperative Principle of Grice (1975) are given below. Of those only the Principle of relevance is directly relevant to the present work. As we shall see in section 4, Zen kōans violate the first and fourth condition of Grice’s Cooperative Principle.

(ii) Principle of relevance: Every act of ostensive communication communicates a presumption of its own optimal relevance.

(iii) Relevance to an individual (classificatory): An assumption is relevant to an individual at a given time if and only if it is relevant in one or more of the contexts accessible to the individual at that time.

(iv) Relevance to an individual (comparative):
   Extent condition 1: an assumption is relevant to an individual to the extent that the contextual effects achieved when it is optimally processed are large.
   Extent condition 2: an assumption is relevant to an individual to the extent that the effort required to process it optimally is small.

(v) Presumption of optimal relevance:
   (a) The ostensive stimulus is relevant enough for it to be worth the addressee’s effort to process it.
   (b) The ostensive stimulus is the most relevant one compatible with the communicators’ abilities and preferences.

Cooperative Principle of Grice (1975):

(vi) Quantity: give the right amount of information (not too little, not too much).

(vii) Quality: try to say only what is true (don’t say that for which you lack adequate evidence; don’t say what you know to be false).

(viii) Relevance: make what you say is relevant to the topic at hand.

(ix) Manner: be clear (avoid ambiguity, excessive wordiness, obscurity, etc.).

\(^{11}\) The Inference Condition of the IC is formalized as follows: If the reader/listener concludes by deduction or induction that the author's intent is \( 1 \), then the optimal meaning is the one which expresses \( 1 \).
The articulated authorial intention of the AIC includes oral or written forms such as recorded statements, aural-visual materials such as video cassettes, CDs, and DVDs.

The third component of Optimal Meaning Detector (OMD) is defined in (29).

\[ \omega \text{-algebra} \]

Let \( x = \Sigma \cdot \omega \) be associated with each perceived meaning in an evaluation table called ‘Tabla’ satisfying terms (i)-(v) specified below. Assume that \( x, \Sigma \) and \( \omega \) are random variables, where \( \omega \) is a binary variable that adopts a value of either 1 or 3/2, and \( \Sigma = (\sigma + \beta + \gamma + \delta) \) whose lower case Greek letters denote values assigned by the TC, RC, AIC, and IC respectively. If the value of \( \gamma \) is \( \emptyset \), then assume \( \beta + \emptyset + \delta = \beta + \delta \).

i. Find the value of \( \Sigma \) for each perceived meaning;
ii. If there is more than one perceived meaning with the highest value in \( \Sigma \), then assign the value 3/2 to \( \omega \) of the most ‘insightful’ meaning, and the rest gets the value 1;
iii. Find the value of \( x \) for each perceived meaning;
iv. If \( x = 15 \), then optimal, otherwise \( x = 15 \) is; and
v. Check the box next to the optimal meaning.

The evaluation devices of the IAAM and that of Optimality Theory share the same purpose of selecting an optimal candidate among possible ones. In the former case an optimal meaning of an ambiguous expression is chosen among possible meanings, whereas in the latter case an optimal output is singled out among possible outputs produced by the generator. The IAAM’s four evaluation criteria are, however, basically different from the evaluation constraints of Optimality Theory. Text criterion (TC) of the IAAM is an essential grammatical requirement ensuring an ambiguous expression to be grammatically coherent within a domain of sentence, or a set of sentences, or a text as a whole, whereas Relevance Criterion (RC) is a prerequisite discourse requirement for mutual understanding between the writer/speaker and the reader/listener. A written or spoken discourse is transmitted by means of a text or utterance which in turn is the basis of an optimal meaning selection, therefore TC comes before RC. This being the case, both TC and RC are generally likely to be satisfied since they are indispensable in a text or an utterance containing intended ambiguity. Consequently, the relative value 1 is assigned for TC and the relative value 2 for RC. On the other hand, Authorial Criterion (AC) and Inference
Criterion (IC) play important roles in singling out an optimal meaning among possible ones. An authorial intent is not usually stated in a text, therefore the reader has to take the burden of finding out the most likely authorial intent by inference. Even if an authorial intent is stated in a text more often than not it is not straightforwardly worded, \(^{12}\) thus the reader has to determine the most likely authorial intent by inference. For these reasons, the relative value 3 is assigned for AC and the relative value 4 for IC. As suggested above, the values assigned to the four criteria are relative and they are kept in minimum using the elementary Arabic numerals to achieve simplicity in calculation. The spirit of simplicity is also seen in the value assignment of \(\omega\)-algebra. Since each of the four criteria has a fixed value, the ranking of criteria is irrelevant unlike Optimality Theoretic evaluation procedures.

Let us now show how the IAAM accounts for concrete examples. This is done in three steps: (i) ambiguity detection, (ii) ambiguity representation, and (iii) optimal meaning selection. The ambiguous sentence, *He chased elephants on horseback* discussed in section 3.1, which is repeated here as in (30) is now accounted for in terms of the Ambiguity Detection (AD) together with the Shared-Knowledge Parameter (SKP).

(30) *He chased elephants on horseback.*
   a. *He chased elephants while riding a horse.*
   b. *He chased elephants which were on horseback.*

The interpretations, (30a) and (30b) are each assigned by the Integrated Ambiguity Representation a distinct integrated ambiguity representation as illustrated in (31a) and (31b), respectively.

\(^{12}\) See Clark (1999: 363).
If we take the speech act context into consideration, we see that there could be yet one more additional interpretation: a combination of both Meaning 1 and Meaning 2. This is a natural consequence since the recognition of both Meaning 1 and Meaning 2 leads to the overall appreciation of the joke. This motivates the addition of Meaning 3 as shown in (32).

(32) Meaning 3: Both Meaning 1 and Meaning 2, where the second involves the punchline.
Let us now consider in terms of the Meaning Evaluation the reasoning leading to the selection of the best possible meaning among the three alternatives as pictured in (33).

(33)

<table>
<thead>
<tr>
<th>Application of Meaning Evaluation (ME)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Text Criterion (TC):</strong></td>
</tr>
<tr>
<td>Meaning 1, Meaning 2 and Meaning 3 are consistent with the given context.</td>
</tr>
<tr>
<td><strong>Relevance Criterion (RC):</strong></td>
</tr>
<tr>
<td>Since the reader/listener’s immediate concern is to recognize a punchline, Meaning 2 is optimal.</td>
</tr>
<tr>
<td><strong>Authorial Intent Criterion (AIC):</strong></td>
</tr>
<tr>
<td>An articulated authorial intent is not available.</td>
</tr>
<tr>
<td><strong>Inference Criterion (IC):</strong></td>
</tr>
<tr>
<td>If the intention of joke-writers is to entertain the reader/listener by skillfully arranging words thereby leading to the reader/listener perceive a punchline as well as a non-punchline interpretation, then Meaning 3 is optimal.</td>
</tr>
</tbody>
</table>

By the \( \omega \)-algebra defined in (29), each of the above three meanings is associated with the equation, \( x=\Sigma \cdot \omega \). The value of \( x \) is calculated by term (iii) of the \( \omega \)-algebra as illustrated in (34). Notice that an articulated authorial intent is not available, therefore the use of the symbol \( \emptyset \).

(34) \[ x=\Sigma \cdot \omega \]

- Meaning 1: \( x=(1+0+\emptyset+0)\times1 \)  
  \[ x=1 \]
- Meaning 2: \( x=(1+2+\emptyset+0)\times1 \)  
  \[ x=3 \]
- Meaning 3: \( x=(1+0+\emptyset+4)\times1 \)  
  \[ x=5 \]

The highest value among the three meanings is 5. Therefore, Meaning 3 is declared optimal and gets a checkmark by term (iv) of the \( \omega \)-algebra as shown in (35).
Let us now take the example introduced in (5) and show the wide applicability of the Integrated Ambiguity Analysis Model (IAAM). We already know that the ambiguous expression ‘a mighty empire’ in the sentence *If you attacked the Persians, you would destroy a mighty empire* allows at least three distinct interpretations as shown in (6), repeated here as in (36). The detection of the three readings is accounted for by the Ambiguity Detection (*AD*) together with the Shared-Knowledge Parameter (*SKP*).

(36) a. the Empire of Persia
    b. the Empire of Lydia
    c. some other empire

The Integrated Ambiguity Representation (*IAR*) provides three distinct representations as pictured in (37).
The procedure for determining the best possible interpretation among the above three meanings is provided in (38).
Application of Meaning Evaluation (ME)

Text Criterion (TC):
Meaning 1, Meaning 2, and Meaning 3 are consistent with the given context.

Relevance Criterion (RC):
Unlike Meaning 3, Meaning 1 and Meaning 2 are immediately relevant to both Croesus and the reader.

Authorial Intent Criterion (AIC):
An articulated author’s intent is not available.

Inference Criterion (IC):
If the author’s intent is to keep the reader in suspense until the outcome of Croesus’s action, then Meaning 2 is optimal.

In terms of term (iii) of the $\omega$-algebra in (29), we obtain the following results.

\[(39) \quad x = \sum \omega \]

Meaning 1: \(x = (1+2+\emptyset+0)\times1\)
\(x = 3\)

Meaning 2: \(x = (1+2+\emptyset+4)\times1\)
\(x = 7\)

Meaning 3: \(x = (1+0+\emptyset+0)\times1\)
\(x = 1\)

By following term (iii) and term (iv) of the $\omega$-algebra, we arrive at the conclusion: Meaning 2 is declared optimal and gets a checkmark.

Table

<table>
<thead>
<tr>
<th>Meanings</th>
<th>TC</th>
<th>RC</th>
<th>AIC</th>
<th>IC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaning 1</td>
<td>1</td>
<td>2</td>
<td>$\emptyset$</td>
<td>0</td>
</tr>
<tr>
<td>√ Meaning 2</td>
<td>1</td>
<td>2</td>
<td>$\emptyset$</td>
<td>4</td>
</tr>
<tr>
<td>Meaning 3</td>
<td>1</td>
<td>0</td>
<td>$\emptyset$</td>
<td>0</td>
</tr>
</tbody>
</table>
The Integrated Ambiguity Analysis Model (IAAM) can account for other examples such as example (25) by following the analogous procedure. The optimal interpretation of (25) is the one in which each Flintstones kid in the group is growing and at the same time the whole group of ten million Flintstones kids is growing. This can be arguably said because, as Norvig (1988: 4) asserts, it is the point of the pun and considered to be the most favorable interpretation intended by the sponsor/creator of the advertisement slogan.

The above elaboration paves the way for the final objective of this paper, an integrated ambiguity analysis of Zen kōan samples taken from *The Blue Cliff Record* and *The Gateless Gate*.\(^\text{13}\)

### 4. Integrated Ambiguity Analysis of classic Zen Kōans

In presenting multiple-ambiguous expressions written in Chinese characters, it is sometimes next to impossible to give an equitable translation to an original expression in form and sound. Therefore, the reader is warned in advance that the original visual and auditory beauties/pleasure of expressions in Chinese/Japanese texts may be lost in the corresponding English translations. The important message I wish to get across to the reader is to give a clear and straightforward linguistic exposition of Zen kōan ambiguity, thereby exemplifying a general practicality and applicability of the IAAM.

#### 4.1 Sample I: The 55th Case of the *Hekiganroku*

The background knowledge of the sample kōan should be provided first for heuristic purposes. A Zen dialogue between a master and student often involves a heated exchange of words and physical contact such as slapping and hitting with a fist or by a stick. This escalation of action is understandable since Zen dialogues often contain a matter of life-or-death. Here is an exemplary story: A monk named Zengen has been deeply

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\(^{13}\) *The Blue Cliff Record* is a collection of Zen Buddhist kōans originally compiled in China during the Song Dynasty in 1125 and then expanded into its present form by the Zen master, Yuanwu Keqin (1063–1135). *The Gateless Gate* is a collection of forty-eight Zen kōans and commentaries compiled in the early 13\(^{th}\) century by a Chinese monk, Wumen. Along with *The Blue Cliff Record*, *The Gateless Gate* is still much used in the Rinzai School of Zen today (See Iriya et al. 2000; Nishimura 1995).
disturbed by a lingering problem of life and death for a long time. As an attendant, he visits a house to express condolences and takes the occasion of tapping on the coffin and asks his master Dōgo if the deceased is dead or alive. Dōgo replies “I do not say he is alive; I do not say he is dead.” Failing to understand what it meant, Zengen demands a one-way-or-the-other answer saying he will hit the master if no answer is given. Dōgo answers, “Hit me if you like but 道即不道.” The expression, 道即不道 ([dau tsjok pjiu dau] in Chinese; [do: sok φu do:] in Japanese) is at least two-way ambiguous between ‘I will not say’ and ‘saying is no-saying’. (The English translation in (43) only expresses the first interpretation.) In this connection, Tseng’s (2002) remark is pertinent:

Zen Masters are witty, in that their responses are intended not only to teach their disciples something about enlightenment, but also to skillfully avoid telling them directly what it is. Moreover, Zen kōans do not simply evoke contradictions; instead, they attempt to resolve and conflate them as unity in diversity, as manifestation of non-duality.14

Consider now the sample kōan.

(41) Chinese text15

碧巌録第五十五則
道吾漸源弔慰

舉。道吾與漸源、至一家弔慰。源拍棺云、生邪死邪。吾云、生也不道、死也不道。源云、為什麼不道。吾云、不道不道。問至中路、源云、和尚快與某甲道。若不道、打和尚去也。吾云、打即任打、道即不道。源便打。

---

14 A Zen master’s awakening experience is unique and original in its manifestation in action or words. In manifesting an attainment in words, expressions used are often metaphorical, suggestive and ambiguous. Therefore, the detection and explanation of Zen kōan ambiguities demand both concentration and dedication. Not only the understanding of Zen Buddhism doctrine but also the knowledge of classical Chinese literature is of crucial importance. In this respect, Hori’s (2003: 44) claim is right to the point: “a good allusion masks but also reveals its object of reference in a clever way, such that the dawning revelation brings pleasure to the reader or listener of the verse.” Without realizing the allusive style of Zen kōans, it is sometimes difficult to grasp a fine nuance of harsh words deliberately delivered by Zen masters and monks.

15 The text is taken from Iriya et al. (2000: 221).
(42) Japanese kun-yomi text\textsuperscript{16}

道吾、漸源と弔慰す

擧す。道吾、漸源と一家に至って弔慰す。源、棺を拍って云く、「生か死か」。吾云く、「生とも道わじ、死とも道わじ」。吾云く、「為何にか道わざる」。吾云く、「道わじ、道わじ」。同りて中路に至り、吾云く、「和尚快かに某甲が與に道え。若し道わざるば、和尚を打ち去らん」。吾云く、「打つことは即ち打つに任す、道うことは即ち道わじ」。源、便ち打つ。

(43) English translation\textsuperscript{17}

55\textsuperscript{th} Case of the Hekiganroku: Dōgo’s “I Will Not Say!”

Dōgo went with his disciple Zengen to a certain house to offer condolences for someone’s death. Zengen rapped on the coffin and said to Dōgo, “Tell me, please, is this life or is this death?” Dōgo replied, “I do not say he is alive; I do not say he is dead.” Zengen then asked, “Why don’t you tell me (one way or the other)?” Dōgo answered “I will not say! I will not say!” On their way back to the temple, Zengen said, “Master! Do tell me! If you don’t, I’ll knock you down!” Dōgo replied, “Strike me if you like—but you won’t get a word out of me.” Zengen thereupon struck him. (Supplement: Afterwards, when Dōgo was dead, Zengen went to Sekisō, [another of his disciples,] and told him what had happened. Sekisō said, “I do not say he was alive, I do not say he was dead. Zengen said, “Why don’t you tell me?” Sekisō said, “I will not say! I will not say!” Zengen suddenly realized the truth.)

By saying 道即不道, Dōgo tries to help Zengen grasp the truth. The ambiguous expression suggests at least two simple but significant truths. First, the answer to the problem of life and death should be sought nowhere but inner-self, therefore Dōgo’s reply, “I will not say!” Second, the other interpretation, ‘saying=no-saying’ points towards a deeper understanding of life and death, life=death: To live is to get closer to death, and to get closer to death is to live. The universe and everything in it are constantly changing. Therefore, any object at any point in time and space is

\textsuperscript{16} Iriya et al. (2000: 221). Kun-yomi means a Japanese way of reading a Chinese character based on its meaning.

\textsuperscript{17} The text is taken from Blyth (1942: 340).
simultaneously at the beginning and end. Thus, Dōgo aptly answered, “I do not say he is alive; I do not say he is dead.” Consider finally Blyth’s (1942: 320) English translation of the twenty fourth case of *Mumonkan* and his comment given under (44), which is directly relevant to the present case.

(44) Blyth’s translation and comment

A monk asked Fūketsu, “Both speaking and silence belongs to the relative world: how can we escape these two errors?” Fūketsu said, I always think of Kōnan in March: Partridges chirp among the scented blossoms. Fūketsu did not speak, he was not silent. A voice came out of the Nothing; the question was answered.

The above exposition reveals yet one more interpretation of the ambiguous expression under consideration: Both “I will not say!” and “saying=no-saying” at the same time. This third interpretation conforms to the purpose of the kōan as the above discussion corroborates.

4.2 Ambiguity representation and optimal meaning selection

We have reviewed the ambiguous expression, 道即不道 and identified its possible interpretations in the given context. The next step is to show an integrated ambiguity representation for each interpretation.

18 Most Zen kōans are at once both direct and simple with very little trace of background knowledge like haiku. As a result, many different interpretations are possible according to the reader’s/listener’s level of attainment and the depth of knowledge. Among many possible interpretations, an optimal one eventually emerges. The optimal interpretation tends to be a simultaneous amalgam of competing interpretations. This is not surprising because the ‘simultaneity’ is a quintessential aspect of Zen. The simultaneity is also seen in Zen drawings, and in Zen-influenced martial arts such as kendo, aikido, and karate. For example, in those martial arts a defensive move is at the same time an offensive move.
(45) Integrated Ambiguity Representation (IAR)

Meaning 1

PHON: Chinese [dɔʊ tʃjʊk pʲʂʊ d̪au]
Japanese [doː sok ɸu doː]
INT: *I will not say. (You should find the answer for yourself.)*
SYN-SEM:

Meaning 2

PHON: Chinese [dɔʊ tʃjʊk pʲʂʊ d̪au]
Japanese [doː sok ɸu doː]
INT: *To say is not to say. (Likewise, living is dying and dying is living; the two are indivisible.)*
SYN-SEM:

Meaning 3

PHON: Chinese [dɔʊ tʃjʊk pʲʂʊ d̪au]
Japanese [doː sok ɸu doː]
INT: Both Meaning 1 and Meaning 2 at the same time.
SYN-SEM: The SYN-SEM of both Meaning 1 and Meaning 2.
The evaluation procedure for the optimal meaning selection among the three perceived meanings is shown in (46).

(46)

<table>
<thead>
<tr>
<th>Application of Meaning Evaluation (ME)</th>
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<tbody>
<tr>
<td><strong>Text Criterion (TC):</strong></td>
</tr>
<tr>
<td>All of Meaning 1, Meaning 2, and Meaning 3 are consistent in the given context.</td>
</tr>
<tr>
<td><strong>Relevance Criterion (RC):</strong></td>
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<tr>
<td>Although Meaning 1 is of immediate relevance to the devoted truth-seeking monk, Meaning 2 and Meaning 3 are directly relevant to the reader because they convey the profound truth.</td>
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<tr>
<td><strong>Authorial Intent Criterion (AIC):</strong></td>
</tr>
<tr>
<td>An articulated author’s intent is not available.</td>
</tr>
<tr>
<td><strong>Inference Criterion (IC):</strong></td>
</tr>
<tr>
<td>Master Dōgo’s answer, 道即不道 is both skillful (in the sense that it is two-way ambiguous) and direct to the point. In one interpretation, ‘I will not say!,’ Dōgo gives a lesson to the monk: You should find the answer for yourself. In the other interpretation, Dōgo plants a hint in the monk’s troubled mind torn between the thought of life and death. In the course of time, the monk grasps the simultaneity of reality: Living is dying and dying is living, the two are indivisible. The monk and the reader are challenged here to perceive the simultaneity of the ambiguous expression, therefore Meaning 3 is optimal.</td>
</tr>
</tbody>
</table>

In terms of term (iii) of the $\omega$-algebra in (29), the selection procedure produces the results illustrated in (47).

(47)

| Meaning 1: $x = (1 + 0 + \emptyset + 0) \times 1$  |
| $x = 1$      |
| Meaning 2: $x = (1 + 2 + \emptyset + 0) \times 1$  |
| $x = 3$      |
| Meaning 3: $x = (1 + 2 + \emptyset + 4) \times 1$  |
| $x = 7$      |

Meaning 3 has the highest value, therefore it is declared optimal and gets a checkmark as shown in (48).
4.3 Sample II: The 1st Case of the Mumonkan

The 1st Case of the *Mumonkan* can be analyzed as follows. As described in the Mahaparinirvana Sutra, the Buddha-nature means the true, immutable, and eternal nature of all beings. Since all beings possess the Buddha-nature, it is possible for them to attain enlightenment and become a Buddha, regardless of what level of existence they occupy (Diener et al. 1991).

Well aware of this teaching, a devoted monk anticipating a positive answer cunningly challenges Master Jōshū and asks the following question: “Does a dog have the Buddha nature or not?” If Master Jōshū gives an affirmative answer, not only does he fall into the error of yes-no relativity but also loses the dual to the monk giving away an easy and penny-worth answer. Baffling the monk’s expectations, Master Jōshū answers “無” (\([\text{lnT}] / [\text{vt}]\) in Chinese; \([\text{lt}]\) in Japanese). This word is multi-ambiguous: (i) 無 is the negative answer “nay”; (ii) 無 is an onomatopoeic word resembling a murmuring sound of approval; (iii) 無 is an onomatopoeic word resembling a dog’s growl; and (iv) 無 is a long voiceless fricative sound passing through the nose produced with closed mouth, which is concentrated upon while in practicing zazen, a form of meditation sitting cross-legged. Through the arduous Zen practice, a student of Zen can become one with 無 and achieve the complete unification where there is no distinction between self and other.

---

19 The word 無 has at least two phonetic variants in Modern Chinese: [móu] in Cantonese and [wu] in Mandarin. There are two phonetic variants of 無 in Japanese: [bu] and [mu]. The [bu] form appears in compound words such as 無精 [bujo] ‘laziness,’ and 無事 [budžī] ‘safe,’ while the [mu] form occurs in words like 無形 [muket] ‘formless,’ and 無心 [mužin] ‘no-mindedness’. Only the [mu] form, however, is allowed when the Chinese character 無 occurs alone.
With the above explanation in mind, let us now consider the sample kōan.

(49) Chinese text

無門関第一則
趙州狗子
趙州和尚、因僧問、狗子還有佛性也無。州云、無。

(50) Japanese kun-yomi text

無門関第一則
趙州の狗子
趙州和尚、因みに僧問、「狗子に還って佛性有りや他た無しや」。州云く、「無」。

(51) English translation

1st Case of the Mumonkan: Jōshū’s “Mu”
A monk asked Jōshū, “Has a dog the Buddha Nature or not?” Jōshū answered, “無, Mu.”

Master Mumon, the editor-author, commentator and advocate of the Mumonkan, offers a commentary on the kōan under discussion in the following verse:

(52) 狗子佛性 全提正令
纔渉有無 喪身失命

The dog, the Buddha Nature,
The pronouncment, perfect and final.
Before you say it has or has not,
You are a dead man on the spot.

---

20 The text is taken from Nishimura (1995: 21).
22 The text is taken from Sekida (1977: 18), to which I made a slight modification.
Moreover, in the post-text comment on the 1st Case of the Mumonkan, Master Mumon writes: “Do not believe 無 means nothing. It is not nothing, the opposite of existence. Concentrate your whole energy into this 無, and you will attain the state of no distinction between subject and object.”

### 4.4 Ambiguity representation and optimal meaning selection

Given below are the integrated ambiguity representations for the expression, 無. Here, the symbol EX stands for exclamation; OP, onomatopoeia; and DP, determiner phrase.

(53) Integrated Ambiguity Representation (IAR)

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<td>No.</td>
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<td></td>
<td>無</td>
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<td></td>
<td>Yes.</td>
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</tbody>
</table>
Meaning 3

PHON:  Chinese [mou]/[wu]  
        Japanese [mu]
INT:     A low growl.
SYN-SEM:
        S               
        OP
無

Meaning 4

PHON:  Chinese [mou]/[wu]  
        Japanese [mu]
INT:     A barely audible long, deep exhalation in zazen.
SYN-SEM:
        S               
        OP
無

Meaning 5

PHON:  Chinese [mou]/[wu]  
        Japanese [mu]
INT:     Absolute nothingness (or undifferentiated state).
SYN-SEM:
        S               
        DP
無

*Absolute nothingness*

The evaluation of the five perceived meanings is now executed in terms of the Meaning Evaluation.
Application of Meaning Evaluation (ME)

Text Criterion (TC):
Meaning 1, Meaning 2, Meaning 3, Meaning 4 and Meaning 5 are all consistent with the given context.

Relevance Criterion (RC):
Meaning 1 and Meaning 2 are of immediate relevance seen from the point of view of the monk’s anticipation and the reader.

Authorial Intent Criterion (AIC):
An articulated author’s intent is not available. However, Mumon’s comment in (52) seems to falsify Meaning 1 and Meaning 2.

Inference Criterion (IC):
If the kōan author’s intention is to help the reader/students of Zen attain enlightenment by direct experience, then Meaning 3, Meaning 4 and Meaning 5 have equal weight.

Optimal meaning selection by term (ii) of $\omega$-algebra:
Among the three candidates, Meaning 3 shows the most penetrating insight since it conveys profound multiple messages:
1. Without saying ‘yes’ or ‘no,’ the question was answered.
2. By transforming into a dog, Jōshū showed that a dog has the Buddha nature. (It is present in all sentient beings.)
3. Jōshū showed an instance of undifferentiated state in a concrete fashion: Jōshū is Jōshū, and at the same time Jōshū=dog, achieving nonduality of the enlightened state. Recall that the original Chinese title is 趙州狗子, whose literal translation is ‘Jōshū dog’.

Each of the five meanings in (53) is now associated with $x=\Sigma \omega$ in terms of the $\omega$-algebra. Notice that Meaning 3 gets the highest value among the three candidates according to term (ii) of the $\omega$-algebra as illustrated in (55). Therefore, Meaning 3 is declared optimal and gets a checkmark as illustrated in (56).
Meanings | TC | RC | AIC | IC | $\Sigma \omega$
---|---|---|---|---|---
Meaning 1 | 1 | 2 | Ø | 0 | $3 \times 1$
Meaning 2 | 1 | 2 | Ø | 0 | $3 \times 1$
Meaning 3 | 1 | 0 | Ø | 4 | $5 \times 3/2$
Meaning 4 | 1 | 0 | Ø | 4 | $5 \times 1$
Meaning 5 | 1 | 0 | Ø | 4 | $5 \times 1$

As the above exposition shows, the Integrated Ambiguity Analysis Model (IAAM) is formulated as a generalized ambiguity analysis model and it has proven effective in analyzing concrete examples of jokes, slogans, and literary work.

5. Possible problems and solutions

Three possible problems should be addressed: (i) Why is the Inference Criterion (IC) ranked over the Authorial Intent Criterion (AIC)?, (ii) Are the Ambiguity Detection (AD) and the Ambiguity Evaluation (AE) legitimate?, and (iii) How does the Integrated Ambiguity Analysis Model (IAAM) cope with hypothetical situations where the same value results as illustrated in (57a) and (57b)? Notice that the hypothetical situations are completely different from the case we have dealt with in (55).
Let us now consider the solution for each of the above possible problems. There are a couple of reasons why I put the IC over the AIC. First, authors rarely express their intended meanings for their deliberate ambiguous expressions. Even if an intended meaning is provided, it is usually concealed in carefully chosen words and skillfully arranged phrases and sentences as exemplified in the kōan examples discussed in section 4.1–4.4. Therefore, a reconstruction of the author’s intended meaning or its approximation is up to the reader’s ability to draw a legitimate inference. (See also the discussion in section 3.3.) Second, the methods of determining authorial intention and its legitimacy has been one of the central issues in the history of literary criticism. Among various viewpoints, theories, and approaches, the basic assumptions of New Criticism and Reader Response theory are relevant to the authorial intention under consideration. Commenting on the New Criticism, García and Angel (1991) claim that

the critic’s meaning is as good as the author’s. The best meaning, in these critic’s [Wimsatt and Beardsley’s (1954)] view, overrides the authorial meaning, especially if the authorial meaning has to be determined by means of information not accessible to the reader.

Hirsch (1967), an advocate of the Reader Response Criticism, claims that although the reader may not determine an authorial intent for sure, he/she is constrained by his/her estimate of the probable intent. Two more additional justifications can be put forward for the reader’s vantage point in constructing an authorial intent or its approximation. An author writes for readers with the intention of sharing his/her sense and thought with the
reader. Moreover, once a piece of work is published it is in the hands of the general public.

The second possible problem implies that if the result of ambiguity detection and optimal meaning selection of an ambiguous expression varies from reader to reader, then generalization would be lost. The issue raised here is a quite natural one. The ambiguity analysis is an intellectual challenge, which requires insight as well as wide and deep knowledge. Therefore, the shared knowledge between the writer/speaker and the reader/listener is essential for the detection and the optimal meaning selection of intended ambiguity. In this sense, the Shared-Knowledge Parameter is well-motivated.

Let us now consider the third possible problem. Meaning 1 of (57a) is unlikely for two reasons. First, it gets the value zero in the Text Criterion (TC). This means that Meaning 1 is incoherent with the given context. Second, Meaning 1 also gets the value zero in the Relevance Criterion (RC) indicating that it is not immediately relevant to the reader. Meaning 1, however, gets the value 3 in the Authorial Intent Criterion (AIC). In such a case, the Inference Criterion (IC) can determine the legitimacy of the AIC taking the above two reasons into consideration. On the other hand, Meaning 1 of (57b) is unlikely since it gets the value zero in both the TC and RC. However, Meaning 1 is declared optimal by the IC. In such a case, term (ii) of the $\omega$-algebra can determine the best possible meaning among Meaning 1 and Meaning 2 of (57b) in terms of the ‘insightfulness’ criterion.

6. Conclusion

The present paper offers a formalized system of Integrated Ambiguity Analysis Model (IAAM). The IAAM accounts for intended ambiguities and produces the following three major results. First, the Ambiguity Detection together with the Shared-Knowledge Parameter accounts for the detection procedure of ambiguous expressions. Second, the Integrated Ambiguity Representation provides a unified phonetic/phonological, syntactic, semantic and pragmatic representation of ambiguous expressions. Finally, the Optimal Meaning Detector together with the Shared-Knowledge Parameter establishes the optimal meaning selection procedure and its application to concrete examples in English and Zen kōans in Chinese/Japanese. Therefore, the paper not only contributes towards
opening the door to the integrated linguistic analysis of intended ambiguity but also helps enhance a study of a linguistics-literature interface.

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Abstract

The essay makes advances toward identifying the form and function of burlesque narrative as a discursive resource in broadcast interaction. It complements existing studies of burlesque in spoken discourse through the examination of situated interaction in a televised Hungarian political talk show (Sajtóklub). The study includes the analysis of a segment of interaction characterized as a bounded episode of interactionally managed burlesque narrative. Burlesque narratives are identified as narratives in which the speaker adopts a persona and performs imaginary actions in the ideological universe of an adversary that reveal the absurdity of that universe and the insidious motives of the adversary. The burlesque narrative emerges as a speech genre that speakers employ in the specific situational context of the political talk show and the discursive context of perceived political provocation (1) to render the adversary’s stance to a public issue absurd, (2) to mitigate their own accountability for the norm violation that this rendering may constitute in the eye of the lampooned adversary, (3) to create opportunities for participant affiliation by means of humor. The analysis also shows that in the extended context of Hungarian political discourse the burlesque narrative functions as a counter-discourse in opposition to a perceived dominant political discourse.

1. Introduction

Of central concern in this essay is the demonstration of the use of burlesque narrative in burlesque interaction, primarily employed to mitigate participants’ moral accountability. The data under consideration were derived from a Hungarian televised talk show, the Press Club (Sajtóklub), a program widely characterized as the mouthpiece of Hungarian radical right-wing politics (Vass 2003). To show the burlesque narrative at work I will first introduce and discuss Kenneth Burke’s (1937/1959) definition of

1 The author is indebted to Robin Shoaps for guiding this essay through its initial stages of formation. The author also thanks Benjamin Bailey, Donal Carbaugh, Leda Cooks, Pentti Haddington, Brion van Over, and two anonymous reviewers for their helpful comments on earlier drafts of this paper.
burlesque as a literary and rhetorical genre. Second, I will discuss issues of voicing using Silverstein’s (2004) formulation of cultural concepts and the analytic framework of participation roles (Goffman 1981; Urban 1989; Irvine 1996). Third, I will analyze a bounded segment of situated interaction as narrative based on Labov’s (1972, 2003) structural analytic framework. Following Bakhtin’s (1986: 60) argument in ‘The problem of speech genres,’ I will make a case for the generic nature of the burlesque narrative by arguing that the form of these narratives is characterized by a constant theme, style, and mode of voicing. Burlesque narratives can be regarded as speech genres if they meet these criteria, that is, if they are characterized by common thematic contents, common evaluative stances and voicing techniques across speakers. Research covering a large amount of situated interactional data attests to the fact that regarding burlesque narratives speech genres constitutes a productive line of cultural interpretation. Since my aim is to trace the contours of a discursive genre I will defer evaluating the politically controversial contents of these narratives, and focus on the narratives’ context, features and functions in spoken discourse.

A second concern of this essay is to demonstrate the rhetorical power of the burlesque narrative in action. As with any discursive genre, the burlesque narrative’s rhetorical power or function derives not merely from its structural properties but from the way it is capable of mobilizing the conversational and cultural context of the interaction to generate meanings (Blum-Kulka 2005: 290). In general, performers of the burlesque narrative respond to a recurrent type of topic whose discussion sequentially precedes the narrative. The topic usually has to do with a public event that is construed by the participants of the Press Club as a “provocation” to sensible right-wing Hungarians. In the data I will present, the provocation participants refer to is the “hate law,” a bill spearheaded by the Hungarian Socialist government and designed to constitute verbal incitement as criminal offense. Participants employ the burlesque narrative form to deride the adversary for ideological hypercorrectness and oversensitivity.

2 Among Hungarian radical right-wing speakers, the initiative to criminalize “hate speech” is widely interpreted as the Hungarian Socialist Left’s attempt to silence them by characterizing controversial elements of their speech as “hate speech” which would in turn constitute legal grounds for speakers’ incarceration.
Speakers locally co-construct an implied definition of hate speech (the uncritical public display of Hitler’s image, a Nazi slogan, or terms associated with Nazi ideology) and present it as absurd. I show that through the creative performance of the burlesque narrative the main speaker and the co-constructors of the narrative manage to perform the discursive practices referred to as hate speech by the speaker’s perceived political adversary, the left.

A final concern is to place my findings in the extended context of Hungarian political discourse and show that in this larger context the burlesque narratives performed on the Press Club function as counter-discourses (Huspek 1993) vis-à-vis what participants conceive of as the dominant discourse of the ruling political ideology.

2. The Press Club

The corpus of data used for this study consists of audio recordings of 33 episodes from the 2003 season of the Press Club and audio recordings (2) and video recordings (41) of the 42 episodes from the 2004 season. The average length of one episode is approximately 55 minutes. The show was broadcast for three seasons (2001–2002, 2003, 2004) on the ATV and Budapest TV television channels. Each season of the program was discontinued when the producers had run out of funding.

The show is a widely recognized, and perhaps the most known and infamous, representative of mediated radical right-wing discourse. The pundits are well-known media personalities who are routinely cast as the representatives of Hungarian far-right activism by the Hungarian political left. The group of pundits that co-host the show varies, but some members give fairly regular appearances. The five major figures most widely associated with the Press Club are István Lovas (journalist, political scientist, university lecturer and translator educated at McGill, UCLA, and the Institute for Political Studies in Paris), Zsolt Bayer (writer, journalist,

3 The latest season of the show which started in January of 2005 is not being broadcast. It is made available on a weekly basis to subscribers on DVD by the Hungarian right-wing media initiative DVTV (Demokrata Videó Televízió).

4 In Data Segment 1/1, line 14 below, “this political wing of ours” as a membership categorization makes sense to the show’s audience because the speakers have previously contrasted their political agenda with that of the socialist-liberal left.
political activist, former high school history teacher), András Benesik (journalist, the editor-in-chief of the right wing political weekly newsmagazine Demokrata), László Gy. Tóth (political scientist, journalist, poet), and Tamás Molnár (graphic artist, co-founder of the Hungarian underground political art movement known as the Inconnu Group). All five men characterize themselves as fiercely anti-Communist, anti-European Union, conservative activist intellectuals.

At the discursive level of topics and themes, their interaction is roughly organized into the following sequence: one of the pundits introduces a problematic topic from the domain of current events, he or she proffers some initial analytic and/or evaluative commentary, other participants proffer comments, the topic is concluded, and a new topic is introduced.

The Press Club as speech event features five types of participant roles. The pundits and their occasional guests relate to one another as of equal status whose opinion is of equal value. They are arranged around a table in a U-shape that is open toward the audience and the cameras. One of the pundits acts as moderator whose functions are (1) to occasionally introduce new topics or to cue another pundit to introduce a new topic, and (2) to occasionally influence turn-taking in order to ensure the equal distribution of turns. The person performing the role of moderator may remain constant across a series of episodes, but may also change from episode to episode. Based on the data available I have not been able to discern a recognizable pattern for moderator selection. The studio audience is present in the studio at the time of recording. It is difficult to gauge the size of the audience because audience members are never shown, the camera is invariably directed at the pundits and their guests. The audience contributes to the show with occasional (and usually inaudible) remarks and comments that are not expressly solicited but are sometimes acknowledged by the pundits and their guests. The audience also contributes boos, cheers, and laughter. Finally, the viewing audience of the program functions as the ultimate recipient of the Press Club. The pundits’ talk is often explicitly directed at this audience.
3. The Burkean concept of burlesque

In *Attitudes Toward History*, Kenneth Burke (1937/1959) characterizes burlesque in literature as an “external approach” (1937/1959: 53) to a critiqued other—external in the sense that the author of the burlesque mitigates the risk of being associated with the object of their criticism by critiquing superficially. Superficiality here, for Burke, means not analyzing the adversary’s argumentation and psychology in great detail but, instead, caricaturing them and their position. Deep analysis, Burke argues, may imply for the audience of the burlesque that the author is guilty of over-identification with the adversary, a positioning the author cannot afford. Burke defines burlesque as follows: “The writer of burlesque makes no attempt to get inside the psyche of his victim. Instead, he is content to select the externals of behavior, driving them to a “logical conclusion” that becomes their “reduction to absurdity”” [my emphasis] (1937/1959: 54). To achieve burlesque, then, the author must engage in the observation of the logic of the adversary’s behavior, and the exposition of the absurdity of that logic.

To what extent is Burke’s conception of burlesque, derived from studies of literature and rhetoric, applicable to burlesque narratives in broadcast interaction? My objective is not to undermine Burke’s argument but to expand it by arguing that the performer of burlesque narratives in a televised talk show must not only mitigate potential criticisms of being inappropriately associated with the adversary, but must also make sure that the powerful adversary cannot hold him or her accountable for the contents of the narrative.

Rhetorical scholars have used Burke’s conception of burlesque to analyze nineteenth century American feminist writers’ contestation of the model of “true womanhood” (Carlson 1988), Truman’s justification for the use of atomic weapons against Japan (Hubbard 1998), the rhetoric of William F. Buckley, Jr. (Appel 1996), and forms of public criticism against Dan Quayle (Moore 1992), US Secretary of Interior James Watt (Bostdorff 1987) and “White folk” in the speeches of civil rights leader Ralph David Abernathy (Selby 2005). Invariably, these studies use non-interactional texts (speeches, essays, cartoons) as their data. In contrast to these studies, Appel (2003) turns to broadcast data in his analysis of the rhetoric of Rush Limbaugh and applies Burke’s formulation of burlesque to mediated talk.
However, his findings are difficult to apply to spoken interaction because the units of his analysis are individual, isolated utterances from Limbaugh’s broadcasts. Appel compiles these isolated instances into catalogues of rhetorical moves and thus the instances become detached from their discursive contexts. What is lost in such an analysis is the explanation of how a given speaker deploys these utterances “to produce socially meaningful action and to achieve (or fail to achieve) mutual understanding” (Fitch 2005: 461) with their interlocutor(s).

The analysis in this study proceeds in a different way. Burke’s argument that a central feature of burlesque is the speaker’s avoidance of potential criticisms of being inappropriately associated with the adversary can be framed as the expression of the desire on the speaker’s part to mitigate moral accountability. In Burke’s discussion, this type of speaker accountability is oriented toward a third party audience. I will expand Burke’s analysis by addressing a different type of accountability, one that is oriented toward the lampooned adversary. In the analysis below I will show how a performer of a comparatively lengthy burlesque narrative mitigates his accountability for what he says for fear of being sanctioned by the adversary. First, I explore the nature and movement of the dual “I of discourse” (Urban 1989) through the burlesque narrative. The narrator and contributing speakers are shown to move in a symbolic space that they themselves create by combining cultural concepts, or concepts that index locally relevant sociocultural meanings beyond their referential meaning (Silverstein 2004: 621), and whose invocation in the context of the Press Club is usually attributed to the pundits’ adversary, the political left. Second, I analyze how the dual “I” translates into a production format (Goffman 1981: 144) in which the responsibility for discourse is assigned to a fictitious principal that is distinct from the author and animator. This translation, as we will see, is achieved by means of the discursive creation of a hypothetical universe (see Shoaps 2007, for a different demonstration of this discursive device). Finally, I offer an explanation of how this production format warrants the decreased accountability of the performer of the burlesque narrative through controlling anticipated entextualizations, discursive strategies that create the semblance of quoting actual previous utterances (Silverstein and Urban 1996: 2) by the adversary. In conclusion, I analyze an example of how the burlesque narrative creates the possibility for rich, multi-layered shadow conversations (Irvine 1996), or invocations
of related utterances, in the face of the threat of entextualization that may bring social harm onto the performer of the burlesque narrative.

4. Analysis: Burlesque in broadcast interaction

The segment below features a conversation from the second season of the Press Club. Because the segment is fairly lengthy, it is useful to summarize the contents of Lovas’s criticism against the Hungarian political left prior to the step-by-step analysis of his performance of the burlesque narrative, the form he employs to present his critique. Lovas posits that the creators and promoters of the “hate law” in the leftist Hungarian government claim that the new law derives legitimacy from the European Union’s tough stance against all forms of hate speech. As we will see below, Lovas deploys a variety of rhetorical devices to show that, contrary to the claims of the Hungarian left, countries of the European Union are lenient toward what the Hungarian government regards as forms of hate speech. What follows from this, according to Lovas, is that the actual purpose of the “hate law” is to use the power of the law to silence radical right-wing voices, including the Press Club.

In the segment, all five main pundits (Lovas, Benesik, Bayer, Tóth Gy., Molnár) are present. In this episode, Bencsik is acting as moderator. Prior to the segment, the participants were discussing two problematic issues. They discuss the left-wing media’s smear campaign against the political right and the right’s inability to mobilize media resources in its own defense. Immediately before the segment below, a participant begins to discuss that the existence of the Demokrata, a weekly magazine widely regarded as the prime representative of radical right-wing voices, will be jeopardized if the “hate law” is passed. Thus, the “provocation” mentioned by the speaker-protagonist of the narrative, Lovas, on line 10 indexes this dual threat against the lamentably passive right: first, the threat of the “hate law” championed by the political left, second, the smear campaign by the left-leaning media.
After an apology to the previous speaker for grabbing the floor and the introduction of a new topic of discussion by (line 1) the moderator gradually yields the floor to Lovas who succeeds in taking it after three attempts (lines 8, 10, 13) on line 14. On lines 14–16 and 18–20 Lovas constructs an image of the Hungarian political right (“this political wing of ours”) that is “provoked endlessly” by the Hungarian political left without any adequate defense (“facing the challenge”) from politicians on the right. On line 20, “e:::” marks the introduction of the “I” of the burlesque
narrative\textsuperscript{7}: Lovas slips into the fantasy persona of a “wholesale wine retailer,” a new occupation that he will adopt after losing his job as a journalist in the wake of the “hate law” taking effect. To use a term introduced by Urban (1989: 36–37) for this type of “I,” Lovas here speaks from a theatrical “I.” We can also see that this persona is activated within the ideological universe of the left in which the “hate law” already holds sway. Subsequent data will demonstrate that this new persona will function as the position from which Lovas will stand in for inept right wing politicians and “face the challenge” from the political left from within its own ideological universe. The action of the speaker-protagonist is initiated on line 23 by means of a future tense verb (leszek, ‘will be’) and from this point onward, the narrative is projected into the future.\textsuperscript{8}

In the following data segment, Lovas continues the narrative with the support of fellow participants and the audience, staying in his theatrical role throughout the segment. The protagonist (Lovas) faces the object of his moral quest (i.e. facing the political left that has just, hypothetically, revoked his license as a journalist).

\begin{table}
\begin{tabular}{ll}
24 & Bencsik \textit{[Na az szép szép dolog.]} \quad Well isn’t that a nice thing to do. \\
25 & Lovas \textit{[Abban a pillanatban hogy]} \quad The moment \\
26 & az EU-ba belépünk (0.4) \quad we join the EU \\
27 & kérlek szépen hhh EU. \quad well I will import EU \\
28 & konform. borokat fogok \quad standard wines \\
29 & hozni, Olaszországból? \quad from Italy. \\
30 & (0.4) Itt van (2.0) \quad Here is \\
31 & ((general laughter as \quad \\
32 & Lovas presumably presents \quad \\
33 & \textit{bottle\textsuperscript{9}}))
\end{tabular}
\end{table}

\textsuperscript{7} In the Hungarian original, the pronoun \textit{I} is not used—the presence of a first person speaker is marked through verb inflection (‘választok’ \textit{I [will] choose}).

\textsuperscript{8} Not all burlesque narratives I have found point the audience to future actions of the speaker-protagonist. In a single exception I have been able to identify, the speaker-protagonist creates a hypothetical scenario with a narrative strand using present tense verbs in the subjunctive or conditional mood.

\textsuperscript{9} The bottle is not a stage prop made for the occasion but an actual product that had been the subject of an international controversy (see for example Blumenthal [2004, July 26] and Schultz [2007, January 9]).
As a member of Lovas’s primary audience (the pundits), Bencsik lends support to Lovas’s performance on line 24. Lovas moves on to specify what type of wine he will import on lines 27–29 (“EU standard wines from Italy”) and 34 (“the latest Hitler Adolf [wine]”). Through this specification, two crucially important cultural concepts come into view. The reference to “EU standard” wine indexes the entire body of EU legislations and standardizations to which Hungary is required to conform following the country’s EU accession. One of these requirements on the part of the EU is for Hungary to create a body of legislation regarding restrictions on the freedom of expression in accordance with the European Convention on Human Rights. In Lovas’s utterances on lines 25–29 the “hate law,” the European Union, and Italy, an EU member country, are presented as symbolic clusters with overlapping components. Next, when Lovas presents the bottle with a label featuring the image of Hitler and the infamous Nazi slogan (lines 42–43) a new cultural concept is introduced in association with the ones mentioned previously.

Audience laughter (lines 31, 41, 45) exhibits characteristics of what conversation analytic research had termed affiliative laughter as opposed to disaffiliative laughter (Clayman 1992) or ‘laughing with’ as opposed to ‘laughing at’ (Glenn 2003: 112). Clayman (1992: 43–46) shows that third-party affiliative audience laughter is likely to occur in rhetorical situations that involve utterances in which the speaker references an opponent,
criticizes that opponent, and marks the utterance as laughable by explicit or implicit means. On line 31, general laughter ensues when Lovas presents the wine bottle during a pause that disrupts his narrative and creates space for the audience to proffer an affiliative response. The bottle itself is also a source of humor: it features an incongruous juxtaposition between an alcoholic beverage and a Nazi dictator, which creates a comic frame for the subsequently voiced “hate speech” (lines 41–43). Earlier on line 17, Bayer also produces affiliative laughter, which, due to the lack of a particular ‘laughable’ in Lovas’s prior utterances, is probably done in anticipation of Lovas’s elaborate performance with the wine bottle.

At this point into the data we are in a good position to explicate what is “hate speech” about the bottle of Cabernet Sauvignon Lovas is holding in his hand? My task here is not to measure Lovas’s interpretation of hate speech against a much more widely circulated definition of hate speech (i.e. derogatory public talk addressed to members of historically oppressed minority groups, or to their entire groups, based on ascribed identity markers such as race, nationality, creed, sex, sexual orientation, age, or physical ability). I am interested in participants’ meanings and their emergence in the process of the burlesque narrative. In this ideological universe dominated by the “hate law,” Lovas’s implicit argument goes, a bottle that exhibits the image of Hitler next to a Nazi slogan performs hate speech. This argument is buttressed by the widely available, though not uniformly accepted, symbolic link in the West between public displays of the image of Hitler and Nazi sloganeering and performances of hate speech (e.g. at Neo-Nazi rallies). The bottle, in the projected ideology of the Hungarian political left, becomes sanctionable hate speech.

What is absurd and insidious about this? Lovas creates the absurd effect by creatively combining the above-mentioned cultural concepts. In his framing, the fact that a “European” (Italian), “EU standard” wine can legally exhibit hate speech reveals the Hungarian political left’s ideological hypercorrectness. From Lovas’s perspective, the adversary wants to criminalize hate speech under the pretext that it is one of the criteria of Hungary’s fast approaching EU membership. But the EU does not criminalize (all) hate speech—as the audience can see, a bottle that bears hate speech is available to anyone for purchase. Hence, Lovas’s argument goes, in its attempt to become “EU standard” regarding hate speech, the Hungarian left overshoots its mark on the one hand, and also enables him,
the wine-retailer, to import Hitler wine because it is a legitimate “EU standard” product. What is insidious about the “hate law” is that in the hands of the Hungarian left, the charge of hate speech is applied selectively—it applies to Hungarians but does not apply to Italians and EU citizens in general—and thus it cannot be seen as motivated by impartial judgment.\footnote{12}

In the following segment, Lovas’s theatrical “I” directly addresses a non-present addressee (Minister of Justice Péter Bárándy) and thereby transposes an imaginary conversation between the minister and the wine retailer in the signaling event (Shoaps 1999: 407) of the burlesque narrative performance.

\textit{(3) Data Segment 1/3}

<table>
<thead>
<tr>
<th>Line</th>
<th>Character</th>
<th>Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>46</td>
<td>Lovas</td>
<td>A (.) Bárándy úr= Mr. Bárándy</td>
</tr>
<tr>
<td>47</td>
<td>Bencsik</td>
<td>=Ez kapható? Olaszország= Can you actually buy this? Italy</td>
</tr>
<tr>
<td>48</td>
<td>Lovas</td>
<td>={hát persze, minden} well of course, at any</td>
</tr>
<tr>
<td>49</td>
<td></td>
<td>{benzinkütnál } gas station</td>
</tr>
<tr>
<td>50</td>
<td>Bayer</td>
<td>={persze mindenhol} of course, everywhere</td>
</tr>
<tr>
<td>51</td>
<td>Molnár</td>
<td>ebből Sztálin is van? Is there a Stalin one?</td>
</tr>
<tr>
<td>52</td>
<td>Lovas</td>
<td>{tessék?} Pardon?</td>
</tr>
<tr>
<td>53</td>
<td>Molnár</td>
<td>Sztálin is van? Sztálin A Stalin one? a Stalin</td>
</tr>
<tr>
<td>54</td>
<td></td>
<td>{bor=} wine</td>
</tr>
<tr>
<td>55</td>
<td>Lovas</td>
<td>{persze!} of course!</td>
</tr>
<tr>
<td>56</td>
<td>Molnár</td>
<td>az is van. [nagyszerű.] They have that. Great.</td>
</tr>
<tr>
<td>57</td>
<td>Lovas</td>
<td>{Kedves } Dear</td>
</tr>
<tr>
<td>58</td>
<td>Molnár</td>
<td>{Örülök } I’m so pleased</td>
</tr>
<tr>
<td>59</td>
<td>Lovas</td>
<td>{Bárándy} úr. Ahogy Mr. Bárándy. The minute</td>
</tr>
<tr>
<td>60</td>
<td></td>
<td>belépünk az Európai we join the European</td>
</tr>
<tr>
<td>61</td>
<td></td>
<td>Unióba folyamodni fogok Union I will apply for</td>
</tr>
<tr>
<td>62</td>
<td></td>
<td>e::: borkereskedői. wine retailing license</td>
</tr>
<tr>
<td>63</td>
<td></td>
<td>engedélyért? és én (0.5) and I, from the moment</td>
</tr>
<tr>
<td>64</td>
<td></td>
<td>(0.2)életbelépésének a passed and from the</td>
</tr>
<tr>
<td>65</td>
<td></td>
<td>a gyűlőlettörvény that the hate law is</td>
</tr>
<tr>
<td>66</td>
<td></td>
<td>(0.2)életbelépésének a passed and from the</td>
</tr>
<tr>
<td>67</td>
<td></td>
<td>pillanatától és az EU-ba moment of our EU</td>
</tr>
<tr>
<td>68</td>
<td></td>
<td>való csatlakozásunktól accession I will bring</td>
</tr>
<tr>
<td>69</td>
<td></td>
<td>(0.2) ilyen borokat fogok wines like this to</td>
</tr>
<tr>
<td>70</td>
<td></td>
<td>Magyarországra hozni. Hungary.</td>
</tr>
</tbody>
</table>

\footnote{12} Ironically, two days after the date of the broadcast (September 5, 2003) it was reported (“Germany in Bid to Ban Hitler Wine,” 2003) that Germany’s government had issued a formal protest against the sale of this particular wine.
On line 47, Bencsik interrupts Lovas to ask for clarification regarding the wine. The clarification question then provides Lovas (lines 48–49) and Bayer (line 50) with an opportunity to elaborate on the wide availability of this particular brand of wine in Italy and thereby further amplify the absurdity of the adversary’s position. On lines 53–54, Molnár requests information about whether other wines bearing the images of dictators exist. Lovas responds with a forceful affirmation (line 55). Molnár, then, proceeds to heighten the sense of absurdity generated by Lovas’s narrative by proffering two remarks (“Great.” and “I’m so pleased.”) that appear to be clearly sarcastic in the light of the pundit’s fierce anti-communism. In sum, the other pundits make a communicative effort to drive Lovas’s burlesque narrative to its “logical conclusion.”

After a failed attempt on line 46, Lovas initiates an utterance (line 57) directed at the non-present addressee, Bárándy, and thereby lends him an interactionally created presence as ratified hearer in the participation framework of the interaction. As a result, the interaction is framed as addressed directly to the Minister of Justice who is responsible for the “hate law.” This inclusion is, however, only one function of addressing Bárándy. The persona of the Minister of Justice also functions as an index of the Hungarian political left by virtue of Bárándy’s membership in the Socialist government of Hungary. The dual symbolism of Bárándy’s social persona equips Lovas with two ways of “facing the challenge,” exposing the absurdity of the “hate law” and thereby exposing the absurdity of the Hungarian political left.

The narrative does not end here. In the following segment Lovas introduces another orientation and complicating action in which he adopts yet another persona, a bathroom furniture importer.

(4) Data Segment 1/4

<table>
<thead>
<tr>
<th>Line</th>
<th>Speaker</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>Lovas</td>
<td>Sőt On top of that</td>
</tr>
<tr>
<td>71</td>
<td>Bayer</td>
<td>((clears throat)) My dear mother</td>
</tr>
<tr>
<td>72</td>
<td>Lovas</td>
<td>[van egy]</td>
</tr>
<tr>
<td>73</td>
<td>Bayer</td>
<td>kis üzlethelyisége owns a small retail space</td>
</tr>
<tr>
<td>74</td>
<td>Lovas</td>
<td>édesanyámnak fölajánlom I can offer you.</td>
</tr>
<tr>
<td>75</td>
<td>Bayer</td>
<td>((general laughter))</td>
</tr>
<tr>
<td>76</td>
<td>Lovas</td>
<td>Köszönöm. A másik amit Thank you. The other thing</td>
</tr>
<tr>
<td>77</td>
<td>Bayer</td>
<td>fogok csnálni (0.4) I will do, well, a few</td>
</tr>
<tr>
<td>78</td>
<td>Lovas</td>
<td>kérlek szépen a days ago I came across an</td>
</tr>
</tbody>
</table>
Süddeutsche Zeitungnak a napokban egy színes mellékletében találtam egy reklámot. Nem tudom, I don’t know if you13 emlékeztek-e arra (0.4) whether you remember when in a radio interjúban (0.4) interview with Viktor Orbán (0.4) teljesen ártatlanul he innocently mentioned megemítette a ö the economic life space14 Magyarország határain Hungary’s borders, túlnyúló magyarokat connecting Hungarians. összekötő gazdasági Normal people of course életteret. (0.6) Normális don’t think about embernek természetesen nem azonnal Lebensraumra this into Lebensraum15 and fordítva és (0.2) there was a insane ó::rületes botrány volt scandal, emlékeztetek ezzel remember, we talked about [foglal]koztunk this on the show 100 Bencsik [ igen ] yes 101 Lovas a Sajtóklubba és mondtuk in the Press Club and we hogy (0.2) hát kérem a said, well, másik oldal is használta the other side used life- az életteret, az nem baj. space but that’s not a 105 (0.8) Na most, nem az problem. Well in this case élettér hanem maga a it’s not life-space but Lebensraum felbukkant ezen Lebensraum itself that a reklámón ((paper appears in this ad rustle))

13 Lovas uses the informal first person singular address form when addressing other participants.
14 “life space”: the English term used in the transcript here stands for the Hungarian term ‘élettér’. The word is the semantic equivalent of the German term ‘Lebensraum’.
15 “Lebensraum”: a key concept in Nazi ideology, denoting the geographical space into which a thriving race (like the Aryan/German) can spread by biological necessity. Hitler viewed Eastern Europe as part of the German Lebensraum. Lovas’s point here is that those who thought Orbán was invoking Nazi ideology through his word choice were reading a meaning into Orbán’s use of the term that was not meant to be there. “Normal people” adhere to a more referential interpretation of the term: “élettér” or “life space” is a space where the (economic) business of everyday life is conducted.
16 Süddeutsche Zeitung: prominent German daily newspaper.
On lines 72 and 74–75, Bayer affirms Lovas’s previous narrative by adding an instance of humorous complicating action to it. The audience and other pundits respond with affiliative laughter (line 76). On line 77 Lovas acknowledges and legitimates Bayer’s contribution (“Thank you”) and launches the next strand of his narrative in which he mobilizes the cultural concept of “Lebensraum” (line 95). This cultural concept indexes a number of other concepts in the context of this narrative: (1) the Hungarian term élettér (‘life space’) meaning a territory where the everyday business of life is conducted, (2) the German word Lebensraum (‘life space’) meaning a space where people live, (3) Nazi uses of the German word Lebensraum to indicate the territory of the expanding Aryan race, (4) the Hungarian word élettér functioning as the Hungarian translation of the Nazi term, and (5) the brand name of a product sold in Germany.

Starting on line 105 (and ending on line 120), Lovas creatively combines these meanings in a way that, once again, exposes the absurdity of the left’s take on hate speech. Lovas implies that in the ideological universe of the leftist agenda fostered by the “hate law,” the public mention of élettér (‘life space’) by a prominent politician on the right (ex-PM Orbán) constitutes hate speech because of its semantic relation to the symbolic German term Lebensraum which, in turn, invokes Nazi ideology. It is “not a problem” (line 104), i.e., it is not hate speech, if the “other side” (the left) or German manufacturers use the same term.

Again, what is absurd and insidious about this? The absurdity arises from the fact that, by the international extension of the leftist ideological universe, a bathtub can perform hate speech by virtue of its name. Here, the prestigious Süddeutsche Zeitung and the German Bundestag function as the measures of correct judgment in contrast with what, according to Lovas, the misguided Hungarian left would do if the “hate law” were passed: read

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17 Bundestag: the German parliament.
18 Mazsihisz: the Federation of Jewish Communities of Hungary.
the term *Lebensraum* as Nazi propaganda. Thus, the left, applying the label hate speech in a knee-jerk fashion, displays signs of oversensitivity by crying wolf at the smallest potential sign of hate speech, and hypercorrectness by wanting to outdo the Germans (and the EU by extension) in sanctioning hate speech. The insidious nature of the left’s ideological universe is, once again, inherent in the selective evaluation of public speech as hate speech.

Lovas on lines 119–120 alludes to the common assumption fostered by members of the Hungarian radical right that the chief Jewish political body in Hungary, MAZSIHISZ, is in cahoots with the political left by virtue of their activism aiming for the criminalization of hate speech. As we will see, on line 141 Bayer will respond to this utterance by building on it in a turn that functions as joint fantasizing (Kotthoff 2006) and, topically, as the further characterization of the adversary in racial terms.

In the following sub-segment, Lovas works his way to the marked end of his narrative of his narrative with the help of the other pundits.

(5) **Data Segment 1/5**

<table>
<thead>
<tr>
<th>Line</th>
<th>Lovas</th>
<th>Bayer</th>
<th>Lovas</th>
</tr>
</thead>
<tbody>
<tr>
<td>124</td>
<td>é (0.4) kérlek szépen én</td>
<td>[hhhhhhhhhhhh]</td>
<td>és (0.8) és akkor hogyha</td>
</tr>
<tr>
<td>125</td>
<td>elhatároztam hogy irok a</td>
<td>[kedves Adolf!] bort! –</td>
<td>and, well, I decided to</td>
</tr>
<tr>
<td>126</td>
<td>(COC)nak? é::s én is be</td>
<td>mondjuk egy jacuzzit! és</td>
<td>write to the (COC)and I</td>
</tr>
<tr>
<td>127</td>
<td>fogok mutatni Lebensraum ő::</td>
<td>akkor ott reggel pezssegzs</td>
<td>will also exhibit</td>
</tr>
<tr>
<td>128</td>
<td>fürdőkádat, ő:: esetleg a</td>
<td>közben [iszol ebből a]=</td>
<td>bathtubs, perhaps I could</td>
</tr>
<tr>
<td>129</td>
<td>kád szélere helyezek egy</td>
<td>[hjjjjjjjjjjjj]=</td>
<td>place on the edge of the</td>
</tr>
<tr>
<td>130</td>
<td>ilyen</td>
<td>borból, kis Mussolini]=</td>
<td>tub</td>
</tr>
<tr>
<td>131</td>
<td>[hjjjjjjjjjjjj]=</td>
<td>[hjjjjjjjjjjjj]=</td>
<td>this wine, a bit of</td>
</tr>
<tr>
<td>132</td>
<td>Bayer</td>
<td>Bayer</td>
<td>Mussolini</td>
</tr>
<tr>
<td>133</td>
<td>Lovas</td>
<td>Lovas</td>
<td>cabernet sauvignon</td>
</tr>
<tr>
<td>134</td>
<td>Bayer</td>
<td>Bayer</td>
<td>and we invite Guszti19</td>
</tr>
<tr>
<td>135</td>
<td>Lovas</td>
<td>Lovas</td>
<td>Zoltai20.</td>
</tr>
<tr>
<td>136</td>
<td>Bayer</td>
<td>Bayer</td>
<td>and then if</td>
</tr>
<tr>
<td>137</td>
<td>Lovas</td>
<td>Bayer</td>
<td>Diminuitive form of the first name “Gusztáv.”</td>
</tr>
<tr>
<td>138</td>
<td>Bayer</td>
<td>lovos</td>
<td>Gusztáv Zoltai: the president of Mazsihisz.</td>
</tr>
</tbody>
</table>

19 Diminuitive form of the first name “Gusztáv.”
20 Gusztáv Zoltai: the president of Mazsihisz.
The narrative action in this segment (lines 124–128) shows the theatrical “I” (fogok ‘I will’) orienting to the Lebensraum cultural concept discussed above. In a similar manner to the wine retailer, the bathtub-importer Lovas stands the left’s hypercorrectness on its head and pokes fun at the Socialist government by “importing” a product whose name invokes Nazi ideology, the ideology he, as a radical right-wing intellectual, is often accused of embracing. He proposes that the moment his importer persona enters the Hungarian market with a bathtub called Lebensraum the name of the product and he himself are protected from the criticism of the Hungarian left since the name of the product did not cause any scandals in Germany. Lovas the pundit/importer’s imaginary action constitutes a discursive jab at the adversary: he can say/do all this and there is nothing the adversary can say because even though it might appear as if Lovas were invoking Nazi ideology through his utterances/action, the product itself meets EU standards, in the name of which the adversary wants to accuse him of hate speech. Again, the persona allows Lovas to expose the self-contradiction the Hungarian left sets itself up for by steadfastly adhering to EU standards and by fostering a misguided interpretation and application of hate speech as a label for public talk.

The image of the “promotional display” (line 146) co-constructed by Lovas and Bayer, and ratified by Bencsik (lines 160–161) marks a narrative confluence between the two threads of this narrative, the protagonist-speaker’s discursive actions as wine-retailer and as bathtub-importer. Bayer’s proposal to invite “Zoltai Guszti” (line 141) to the display extends
the burlesque to a new, secondary adversary (the “MAZSIHISZ lobby,” lines 119–120). In the speaker-protagonist’s treatment this group was not included in the burlesque narrative as a character but Bayer weaves the group into the narrative action itself. The audience responds to Bayer’s utterance with affiliative laughter (line 143) Arguably, besides the criticism of the new adversary they are responding to the juxtaposition of a Jewish community leader and objects representing “hate speech” in an imaginary situation. Finally, as the last act of the theatrical “I,” on lines 149–155 Lovas indirectly addresses Minister of Equal Opportunity Katalin Lévai and points out the insidious nature of the absurd antics of her government, namely the partial application of the “hate law” and the hate speech label to himself, and, by implication, the political wing he associates himself with. Lovas terminates the narrative on lines 158–159 and the moderator affirms the termination on the following two lines.

5. Voice and moral accountability in the burlesque narrative

To summarize what has been said above about Lovas’s discursive “I” we can say that it is clearly distinct from the indexical-referential “I” that stands for Lovas the political pundit speaking in the moment of the speech event. This “I” is a theatrical one which is, as Urban (1989) points out, fundamentally social since no-one in Lovas’s audience has any doubt that he is in fact neither a wine-retailer, nor a bathroom furniture importer. I will argue that the use of the theatrical “I” occasions a split within Lovas’s role as speaker. Based on Goffman’s (1981) formulation of the production format (144) it can be said that Lovas the animator (who produces utterances) and author (who combines the cultural concepts of the political left into a burlesque narrative) becomes detached from the principle of his performance. This production format implies that it is not Lovas the pundit who is responsible for uttering a widely recognized Nazi slogan or playfully invoking Nazi ideology and thus provoke accusations of hate speech, and it is not Lovas the pundit who makes fun of the establishment’s anticipated alarm over the Lebensraum bathtubs, but Lovas the wine retailer and the furniture importer, respectively.21

21 Shoaps (1999) makes a similar argument about Rush Limbaugh’s discursive strategies.
The above analysis shows that the burlesque narrative is characterized by particular discursive strategies realized through the manipulation of the production format. The production format employed in the burlesque narrative places constraints both on the performer (Lovas) and the adversary (the left and, to a certain extent, the “Jewish lobby”), the object of the burlesque. The performer mobilizes cultural concepts made available to them by the adversary to achieve the impression of absurdity. The performer can recombine these elements as they see fit, but the range of their choice of elements is limited by the adversary’s discourse. The adversary’s potential subsequent response is also shaped by the production format. On the one hand, before they can rebuke the performer they must address the contradiction that emerged from the performer’s burlesque. More importantly, in their rebuke they will not be able to entextualize the performer’s speech as proof of their use of hate speech because (a) the performer has delegated the responsibility for his utterances to a projected principal, and (b) he is conducting himself within the comic frame of burlesque in which every utterance can be referred to as “just a joke.”

To illustrate the complexity of voicing (or multivocality) it is useful to return to the moment in the interaction when Lovas is reading the label on the bottle (lines 42–44). This interactional moment captures all shadow conversations (Irvine 1996) that murmur in the background of the speaker’s utterances. As Irvine puts it, “[e]choes of the speech of others appear in one’s discourse not only in overtly marked constructions (the overt representation of their talk, whether in direct or indirect quotation, or even “free indirect style”), but in many covert forms as well—forms that imitate, stylize, or parody the stylistic features associated with other persons, genres, times, and places” (151). The roles within the production format

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22 In ‘The problem of speech genres’ Bakhtin (1986) writes: “The utterance is filled with dialogic overtones, and they must be taken into account in order to understand fully the style of the utterance. After all, our thought itself—philosophical, scientific, and artistic—is born and shaped in the process of interaction and struggle with others’ thought, and this cannot but be reflected in the forms that verbally express our thought as well” (92, Bakhtin’s emphasis). Even though Bakhtin served as my point of departure toward the discussion of voice in burlesque narratives at the beginning of this essay I chose to invoke Irvine’s concept of shadow conversations here instead of Bakhtin’s ‘dialogic overtones’ because Irvine’s formulation creates a useful distinction between overt and covert forms of bringing the voices of others into discourse.
of the burlesque narrative are important voices in these conversations, but we can also infer the presence of others. When Lovas utters the words “Ein Volk, ein Reich, ein Führer,” the following voices constitute the full meaning of his utterance:

− the voice of the winemaker (producer of EU standard wine);
− the voice of Nazism, the symbolic embodiment of hate speech;
− the voice of the speaker (Lovas₁);
− the voice of the wine retailer (Lovas₂);
− the voice of the alleged Neo-Nazi (Lovas₃);
− the (anticipated) voice of the adversary who will accuse Lovas₁ of being a Neo-Nazi by quoting this very utterance—and thereby expose their absurdity since they accuse an EU standard object of being non-EU standard, i.e. hateful.

The multiplicity of voices that are present constitute a discursive maze in which the performer of the burlesque narrative can hide their discursive persona from critical entextualizations. If the performer is accused of speaking from one voice he has the option of claiming that he was in fact speaking from another. Then, as I have mentioned above, if this strategy of mitigating accountability fails, the burlesque narrative equips the performer with the option of claiming: “All of that was said in good fun.” And finally, the speaker can also claim to have dispersed accountability among his co-participants and his entire audience. Since his invocation of cultural symbols happen in the form of allusions, “the responsibility for the interpretation is shifted onto the [audience]” (Wodak 2002: 239). In effect, the performer of burlesque narrative uses this genre partly because it provides him with plausible deniability in case he is held accountable for his speech. Complex voicing practices create future opportunities for the speaker-protagonist of the burlesque narrative to mitigate the negative consequences of the adversary’s subsequent critical entextualizations (Silverstein and Urban 1996: 2) of controversial elements of the burlesque narrative.

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23 A similar claim can be made about the utterance on lines 111–112.
6. The narrative element of burlesque

Although the above data do not fully fit Labov’s (1972: 369) canonical characterization of the structure of narratives of personal experience, in agreement with Goodwin (1990/1991) I maintain that in the burlesque narrative (or any other type of narrative) “the primary organization of the descriptions is to be found not in properties of the past events being described but rather in the structure of present interaction” (275).

The burlesque narrative is a type of narrative in which the speaker adopts a persona and performs imaginary actions in the ideological universe of an adversary that reveal the absurdity of that universe and the insidious motives of the adversary. The speaker’s symbolic quest highlights and reorganizes familiar cultural concepts (Silverstein 2004) in absurd ways. The burlesque narrative differs, both structurally and topically, from Labov’s formulation of the basic structure of narratives of personal experience. First, the data set I have isolated in *Press Club* transcripts as representatives of burlesque narrative indicate that these narrative sequences create imaginary scenarios in which the speaker-protagonist functions through the use of the future tense (or present tense to indicate future events), modals, and imperatives. The past tense therefore has a marginal, if any, role in the telling of these narratives. Second, burlesque narratives cannot be characterized as narratives of personal experience because due to the markedly absurd character of these narratives the speaker did not and will never live through the experiences he describes as his own. Third, although the burlesque narrative features a main speaker-protagonist, other participants (pundits, audience) are entitled to jointly move the story forward. The burlesque narrative offers two types of opportunities for co-participants of the speaker-protagonist. They can engage in joint fantasizing (Kotthoff 2006: 17–23) or the joint elaboration of the imaginary situation with the speaker (cf. lines 141 and 145–146). They can also respond to utterances that the speaker-protagonist marks as humorous with affiliative laughter (Clayman 1992) and thereby align themselves with the main speaker.

In spite of features that are not included in the canonical formulation, Labov’s analytic approach helps point out the central structural properties of the burlesque narrative. On the one hand, the burlesque narrative does exhibit similarities with oral narratives of personal experience. The above
narrative begins with an abstract supplied by the moderator (lines 4–7, 9, 10–11). The speaker/protagonist supplies the orientation (lines 14–16, 18–20, 25–26). The first of the two strands of the (minimal) complicating action are supplied by the speaker (lines 20–23, 27–29). The second strand, after a lengthy orientation (lines 77–120), is jointly supplied by the speaker and another participant (lines 124–156). The narrative is concluded with an evaluation (lines 156–157) and a coda (lines 158–159) that returns listeners into the non-fictional present.

7. The functions of burlesque narratives

I have established that the burlesque narrative as a speech genre (Bakhtin 1986) is characterized by a distinctive theme (60), namely the representation of the absurdity of an adversary’s point of view from an imaginary persona and from within the adversary’s ideological universe. It is also characterized by a style, or an evaluative orientation to the referentially semantic content (humorously negative evaluation) which is accomplished through complex and artful voicing practices activating moral stances. The analysis has also shown that the function of evaluation is fulfilled by means of a discursive strategy, the presentation of absurdity in a burlesque frame that mitigates the speaker’s accountability for the norm violation that rendering the adversary’s perspective may constitute in the eye of that lampooned adversary.

To tie the discussion back to Burke’s (1937/1959: 54) description of burlesque, the burlesque narrative fulfills the one major function of burlesque that Burke identifies: it reduces the adversary’s position to absurdity. However, my analysis of situated interaction departs to a certain extent from Burke’s analysis of literary burlesque on the account of the other function he names. This function is avoiding accusations of over-identification with the adversary by means of attending only to the “external,” superficial elements of the adversary’s position. I agree with Burke that the speaker-protagonist of the burlesque narrative must clearly mark his or her own position as opposed to the adversary. Arguably, this is especially so in the context of a televised, radically conservative talk show where careful analysis of the other’s position is much less interesting and entertaining for the target audience as caricature. However, a complete account of the mitigation of moral accountability in the burlesque narrative
must point out that the speaker-protagonist shapes his utterances in anticipation of potential moral criticism and/or social sanctioning both by a third-party audience and the adversary. I would add to Burke’s observation about burlesque that the speaker-protagonist must also keep a wary eye on the powerful adversary which has at its discretion, or may have in the future, laws like the “hate law” that could later be brought to bear in a critique of the speaker-protagonist’s present speech.

Finally, the burlesque narrative also functions to provide opportunities of affiliation to present and, arguably, non-present participants of the broadcast. This affiliation is accomplished by the humor inherent in burlesque narrative performances, and by the fact that the audience is ‘in’ on the jokes. Pundits and audience members alike are familiar with the cultural concepts that are reorganized into absurd constellations by the speaker-protagonist, and understand why the constellations are absurd. Thus, burlesque narrative as an oral genre of humor (Kotthoff 2006) forges a sense of inclusiveness and belonging among members of the participation framework of its telling.

One way to fathom the larger social significance of burlesque narratives beyond the immediate context of its performance, in the context of Hungarian political discourse, is to regard burlesque narratives as counter-discourses (Huspek 1993) in the socio-cultural context of Hungarian political discourse. Huspek argues that speakers do not operate in any single discursive structure but rather they can combine elements (sounds, words, meanings) of multiple structures in their discourse. Regarding the central question that he poses at the beginning of his essay (What is the relationship between discourse and power?), Huspek says that any speaker in any situation involving a power imbalance has a minimum of two choices: to defer to the discourse of the powerful, or to adopt a counter-discourse which involves the creation and cultivation of an antilanguage that flaunts breaking the rules of the dominant discourse.

Burlesque narratives function as counter-discourses in the Hungarian public sphere. Performers of burlesque narratives in the Press Club discourse who position themselves as oppressed by the dominant discourse of the political left “face the challenge” (to use a term from Lovas) in the face of “provocation” by taking cultural concepts from the dominant
discourse and combining them into discourses of resistance.\textsuperscript{24} The burlesque narrative, as antilanguage or antidiscourse, is inevitably parasitic on the dominant discourse whose absurdity it sets out to expose. This resistance is carried out concurrently with the discursive creation of plausible deniability. As a result of these discursive strategies, speakers accomplish the symbolic act of “facing the challenge,” an act that consists of (a) the presentation of self as the representative of reasonable views who is (b) provoked by political adversaries for representing those views, and (c) the presentation of reasonable views (or the absurdity of the adversary’s views), by the means of burlesque narratives.

8. Conclusion

In the context of Hungarian political discourse, the burlesque narrative emerges as a speech genre. This type of narrative constitutes a speech event that features a television studio as setting, and a speaker-protagonist, his fellow pundits, a non-present (but sometimes directly addressed) adversary, and present and non-present audiences. The objective of the speaker-protagonist of the narrative and the fellow pundits who participate in its construction is to lampoon the adversary and render its position ludicrous. The lampooning is done in a way that does not carefully consider the minutiae of the adversary’s position, but instead presents that position as completely worthless and laughable, criticizing the position in a way that maintains plausible deniability for the participants of the burlesque performance. The style of presentation is humorous and sarcastic.\textsuperscript{25}

\textsuperscript{24} Burlesque as counter-discourse had been used in similar rhetorical situations by nineteenth century French intellectuals castigating the moral complacency of the increasingly dominant bourgeoisie (Terdiman 1990: 153), by civil rights activist Ralph David Abernathy to mark and ridicule racist White attitudes (Selby 2005) and by nineteenth century American feminists rejecting the dominant stereotypical social role of the “true woman” (Carlson 1988).

\textsuperscript{25} As Ed Appel (personal communication) pointed out to me, Burke saw burlesque as slapstick comedy. Although the present analysis of the burlesque narrative may create the impression that its comprehension requires above average cognitive effort from the audience, as a native Hungarian I would argue that anyone with a high school education, a vague familiarity with Hungarian current events, and a matching political agenda can easily appreciate this kind of humor.
Structurally, the burlesque narrative genre relies on a specific kind of narrative structure and multilayered voicing achieved via the rearrangement of the adversary’s cultural concepts in a way that they are still recognizable as such. Used by speakers who see themselves under threat from an adversary of greater means and power, the burlesque narrative is a resource that serves the dual purpose of discursive resistance and affiliation.

References


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On the Limits of Productive Word Formation: Experimental Data from Finnish

Abstract

In some languages, such as Turkish, Hungarian or Finnish, word formation can be said to be characteristically creative. In these languages, it is quite normal to create novel words by merging several suffixes after the stem. This process may be iterative, allowing recursive stacking of morphemes to the stem. Although it is well-known that in some languages word formation is in this way productive relative to other languages, there is little behavioral data concerning the limits of such productivity. We report an experimental investigation of the limits of word formation in Finnish and argue on the basis of our results that the word formation in Finnish is fully productive, even recursive, but it is counterbalanced by a strong complexity effect which restricts speakers’ ability to understand complex words.

1. Introduction

Word formation refers to our ability to form new words from previously learned or assembled parts. Speakers of English can readily understand polymorphemic words such as iraqification or alienability even if they have never seen these words before. Some languages, such as Turkish, Finnish or Hungarian, appear to make much use of such word formation potential (Brattico 2005, Karlsson 1983, Koskenniemi 1985, Niemi, Laine & Tuominen 1994, Sulkala & Karjalainen 1992). In Finnish, for instance, it is possible to causativisize nouns, adjectives and verbs recursively, so that one can find words with three causative morphemes stacked one after another (i.e. tee-tä-ty-ttä-ä, make-CAU-CAU-CAU-V). Apart from marginal cases, this type of process is absent in such languages as English (Plag 2003: 134) or Chinese (Packard 2000, Sagart 2001). Although it is well-

1 This research project was financially supported by the Academy of Finland (project number 1060741) for the first author and the University of Helsinki for the second author.
known that some languages are morphologically productive, less is known about the limits of this otherwise excessive productivity. How many causative or other suffixes one can merge to one word? Is there a limit in the process and, if so, what kind of limit is it?

Linguists do not yet have a definite answer to this question; rather, the problem constitutes “a battleground, on which many important linguistic wars have been fought” (Borer 1998: 151). This problem boils down to the fact that words exhibit what could be termed as “limited generativity”: words sometimes behave as if they were generated by generative word formation rules, as in Finnish causativization, yet it is clear that this potential is also strictly limited. Thus, while some authors believe that words have a generative syntax of their own, or that they are generated by the same computational process as the syntax (Baker 1988, Lieber 1992, Hale & Keyser 1993, Marantz 1997, Selkirk 1982, Ullman 2001), others favor autonomous and often characteristically non-syntactic models of word formation (Anderson 1992, Aronoff 1976, Chomsky 1970, Karlsson 1983). Karlsson (1983), for instance, argues that despite such productivity Finnish morphology is based on a finite number of morphotactic positions, i.e., fixed morphological slots for suffixes.

Psycholinguistic and neurolinguistic research on word formation appears to be in no better position to solve this issue. This is because most of the psycholinguistic research on the processing of polymorphemic words has focused on the processing of relatively simple words, such as those containing only one or two morphemes (Emmorey & Fromkin 1988, Frost, Grainker & Rastle 2005, Hankamer 1989, McQueen & Cutler 1998). Moreover, this research thread has been concentrated mostly on words which exist in the lexicons of the speakers of the language, unlike most of the novel complex words made possible by recursive word formation rules. Indeed, this research thread has converged into the idea that there are two parallel routes through which we access words in language comprehension and language production: via lexicon and via morphological parser (Caramazza et al. 1988, Schreuder & Baayen 1995). Yet this proposal works only if there is lexical access to a polymorphemic word. While tracing lexical access is a worthwhile project in and of itself, in order to study the limits of creative word formation potential we need to expose subjects to novel words which do not yet exist in their lexicons, and hence to words which are accessible only through their morphological parser (Hankamer 1989) and whose interpretation is not facilitated by prior knowledge.
Another much used strategy for gauging productivity in word formation has been based on the examination of corpora. The basic assumption underlying this approach is that the degree of productivity of a given morphological suffix can be identified as the degree of its ability to merge with various lexeme types. A less productive suffix is one which attaches only to few lexemes, whereas a fully productive suffix is one which can attach to virtually any word, with a range of intermediate cases falling between these two extreme cases. Various statistical methods exist for the estimation of such productivity from the corpora (Baayen 1994, 2005). The problem with this method in the case of morphologically productive languages is that, given that the number of potential words made possible by iterative suffixation approaches astronomical numbers (Niemi, Laine & Tuominen 1994), their type and even token frequencies in any corpus approaches zero. Indeed, when we generated Finnish words randomly by suffixing derivational suffixes to the stems, layering two such suffixes generated words that could not be found from the largest corpus available to us. Furthermore, most morphemes in Finnish are close to being fully productive in that there are only few exceptional words that these morphemes cannot be merged to. The question of whether and how native speakers of Finnish could interpret such words if they were to confront them has to be assessed by different means. To try to study the limits of productive word formation, we rely here on psycholinguistic experimentation.

This methodological stance is related to another matter that sets the current research agenda apart from many other studies on word formation. It is not our primary interest to describe the rules which capture the set of Finnish words currently in frequent use within some geographically, temporally and socio-culturally defined area (compare Hakulinen et al. 2004). Instead, we assume that the word tokens found from the corpora or from everyday use derive ultimately from some type of linguistic/cognitive mechanism(s) implemented in the human brain, the latter constituting the subject matter of this study. What we thus mean by saying that word formation is based on “limited generativity” is that it is these cognitive word generation processes which fall somewhere between fully productive processes and simple lists, both types of mechanisms which are well studied in the cognitive science literature. This point bears some emphasis since although much is known about the frequencies of word types and tokens in actual use, there is very little agreement on the nature of the cognitive processes underlying word generation and morphological
parsing, not to speak about the limits of such parsing processes. We are therefore not attempting to characterize the set of Finnish words, but the mechanisms underlying their use. Secondly, the cognitive research agenda cannot be limited to the study of existing words, as the cognitive processes under scrutiny here are those which are responsible for the parsing and use of all possible words, currently existing or not.

The background of the experiments reported here is as follows. Consider the model of Finnish word formation, as depicted in Karlsson (1983). As noted above, Finnish allows one to stack at least three causative suffixes one after another. The word formation rules seem to allow even more (i.e., tee-tä-ty-tä-ty-tä, tee-tä-ty-tä-ty-tä), but triple causatives are nevertheless already extremely rare in actual use. Karlsson suggests that these three causative suffixes each fill up their own morphotactic position, thus the three so-called “verbal suffix positions” which come right after the root stem. The system is therefore inherently finite since it is based on three slots for verbal suffixes. As a description of Finnish words currently in use, this stance is relatively unproblematic. However, the question still arises whether the cognitive mechanisms underlying the use of such words are recursive or not. Brattico (2005) describes the same causativization as a fully recursive process where the system allows one to add a causative suffix to an already causativized word. The rule therefore allows in principle an unlimited stacking of causative suffixes. If this latter model is correct, then something else than word formation rules has to explain why the process is limited to a few morphemes.

These two hypotheses make different predictions concerning the behavior of complex Finnish words. A theory which assumes that cognitive word formation is based on a finite and fixed number of morphotactic positions predicts that the grammaticality and semanticality of complex but otherwise correct words, as intuited by native speakers, should fall rather suddenly after more suffixes are merged to the word than what is allowed by the putative fixed positions. In other words, the fixed boundaries of the morphotactic positions in word formation should be behaviorally detectable. We call this the overflow effect: when the available fixed positions are filled, the rest of the material overflows from the system.

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2 One example of a triple causative used in Finnish can be found by using the Google search engine (29.10.2007), namely, the abovementioned teetätyttää, ‘MAKE-CAU-CAU-CAU-V’. However, this word does not certainly feel deviant in any way; only the four causative morphemes create a sense of deviance.
creating a clear peak in the loss of performance. The magnitude of such non-linearity is an open issue and of some interest in itself, but this hypothesis implies that we should nevertheless see some kind of effect. In this article we report an experiment aimed at testing this prediction, i.e., finding out whether morphological productivity in Finnish stops abruptly and, if so, how soon and how abruptly this limiting barrier takes effect. Moreover, we wanted to see how many suffixes one can add to a word in Finnish to produce items which are still felt to be more grammatical than words generated by violating strict word formation rules.

2. Methods

To investigate the limits of morphological competence, we need to expose subjects to complex enough words to be able to see the shape and the location of the non-linear overflow effect if it exists. Thus, we need stimulus words with varying complexity, starting from few morphemes up to possibly quite many. One problem is to find a way to construct such hypercomplex stimulus items. A corpus search is out of question, since words commonly found from corpora are in active use in the language, and hence they are most likely to be lexicalized to varying degrees. Thus, speakers have prior knowledge of such items. The second possibility is that the stimulus words are constructed by native speakers of the language. Such items are nevertheless likely to be contaminated by uncontrolled biases, thus unknown variables which could either make the items systematically easier or more difficult to process. Instead, in this study we selected the stimulus words by selecting the suffixes randomly (without violating the word formation rules of the language). Random generation ensures that other variables besides complexity do not enter systematically into the experiment and that the stimuli is not biased to favor either one of the hypotheses. The details of this process are described in the next section.

There is an additional problem with any selection method which aims to tap the complexity limits in morphological processing. Suppose we want to craft very complex words containing, say, six derivational morphemes. It is possible that the word formation rules dictate that the morphemes that can be inserted close to the root come from a different set than those that can be inserted closer to the word boundary. Furthermore, the actual word formation rules could differ as well. This means that we would be probing the effects of different sets of morphemes and word formation rules at different complexity levels, so that the relevant experimental conditions
would not differ only in terms of their complexity, i.e., number of morphemes. Although still possible, the results from such an experiment would not allow us to draw strong conclusions about complexity as such. To overcome this problem, it is reasonable to try to select morphemes which can be drawn from the same set of morphemes by the same word formation rules at every morpheme position used in the stimulus generation.

Following the above guidelines, we generated two categories of novel and complex Finnish words for the experiment. In the category of grammatical words, the stimulus words followed the word formation rules of Finnish. In the category of ungrammatical words, the words contained one morphologically illegal step. In both categories, we produced words with varying complexity, where complexity was measured in terms of the number of morphemes. Both categories had words containing two to six randomly selected morphemes, including the root stem. Thus, we manipulated two independent variables, morphological grammaticality and morphological complexity.

An additional methodological difficulty concerns the way in which reliable grammaticality and semanticality judgments can be obtained. A linguistic introspection originating from a single linguist, often used alone, carries little weight in the present case, if only because of the labile and graded nature of well-formedness intuitions in the case of complex words. Moreover, to detect non-linearities in grammaticality and semanticality judgments a more fine-grained method is called for. These methodological concerns have been discussed recently by Bard et al. (1996), Cowart (1997) and Schütze (1996), and on the basis of these studies (Schütze 1996 in particular) we concluded that (1) the grammaticality and semanticality judgments must be elicited from a statistically sufficiently large pool of linguistically naïve subjects, (2) the order of the presentation of the stimulus materials needs to be randomized individually for each subject, (3) context effects, such as time pressure, need to be minimized, (4) task instructions must remain invariant across subjects, (5) between-subject and within-subject variation should be reported and handled statistically, (6) grammaticality and semanticality should be measured along a five-point scale, rather than on a forced binary choice (grammatical vs. ungrammatical), due to the possible graded nature of the grammaticality judgment, and (7) the experiment should be recorded on a video tape for additional analyses. Finally, since grammaticality and semanticality judgments are sensitive to a number of contextual factors, such as task
instructions, the experiment was designed so that instead of interpreting absolute grammaticality values, the results are interpreted by comparing the experimental groups with each other. Thus, the group of ungrammatical words provides a baseline against which we interpret the effects of complexity. The results could then be replicated and compared with other task instructions, for example. Following these guidelines, we first asked subjects to provide a semantic analysis and a grammaticality judgment on a numerical scale from one to five for each of the target items.

Since it is uncommon to use statistical inference in the case of grammaticality and semanticality judgments, or in the linguistic argumentation more generally, we comment on this methodology briefly here and on how the present results should be interpreted. There are several reasons why linguists do not use statistical methods. In some cases, the grammaticality or semanticality of a target expression is assessed by a single linguist alone, who perceives the expression to be grammatical or ungrammatical and reports this as data. Implicit in this methodology is the assumption that if several subjects would have been used in the same task, the judgments would have converged into the same result. Thus, the benefits for running several experiments at once by a single linguist clearly outweighs the extra reliability that we would obtain if we test each expression with several native speakers in a controlled environment. While generally speaking there is nothing wrong with this method, in some cases it does not produce convincing results. This is especially true when grammaticality/semanticality judgments fluctuate or when they are graded rather than clear-cut. In that case, it is clearly better to take the trouble to use several native speakers as informants and gather many grammaticality/semanticality judgments for each target expression to see whether they all converge into some representative value, such as the mean or the median, and whether and how much the judgments differ from each other. In a normal situation, we would get a mean grammaticality judgment for each expression with some amount of variance associated with it, and these means are very often different from each other due to many random factors which influence individual judgments. The purpose of statistical inference is to find out whether the differences in the observed means are due to pure chance or whether the difference is due to some systematic factor (the nature of these factors depending on the experimental design). The results are reported in terms of p-values, which represent the probability that the difference between two means is obtained by pure
chance. The smaller the p-value, the higher the chances are that the difference is due to a real result.

3. Experiment

3.1 Stimuli

In this section we describe the model behind stimulus generation. This model is not essential for the interpretation of the results. First, the experiment itself could be replicated by using any model of word formation, keeping the above guidelines in mind. Second, all the stimulus words and their grammaticality and semanticality estimations obtained from the experiment are provided in the appendix, making it possible to interpret the results under any other theoretical framework or under any other model of Finnish word formation.

The underlying model here is based on the idea that Finnish word formation dissolves into two layers or strata, but this idea itself is controversial and should not be taken for granted. Rather, the experimental design is such that the model itself can be verified or falsified by the experiment.3

The stimulus words were generated according to a model of Finnish derivational morphology (Brattico 2005). Brattico follows Marantz (1997, 2000) in the contention that word formation in Finnish is a product of the fully generative engine in the brain. The model was selected here because it allows us to iterate relatively freely certain word formation rules of Finnish. The model borrows from Giegerich (1999) and much earlier literature (Allen 1978, Kiparsky 1982, for a recent review, see McMahon 2000: 1–53) in assuming that from the perspective of linguistic competence, word formation is constituted by two layers of word formation. The first layer, corresponding roughly to derivational

3 This is because one of the independent variables was Grammaticality. If the model predicts the distinction between grammatical or ungrammatical words wrongly, this should become evident in the experiment itself in that the subjects should rate grammatical words as deviant, hence ungrammatical, and ungrammatical words as grammatical. In that case, the results of the experiment could not be interpreted at all. If, on the other hand, subjects’ judgments agree with Grammaticality, we can conclude that the word formation model behind the experiment is in reasonable agreement with reality. This applies to any putative word formation model used in the experiment.
morphology, produces lexemes by applying the generative engine so that the process is constrained only by semantic conditions. Recursivity guarantees that there is no upper bound of word complexity with regard to competence, i.e., the knowledge of language as opposed to its use. The second layer, corresponding roughly to inflectional morphology, applies word formation rules on the basis of the syntactic context of the lexeme in the sentence as a whole. This layer consists of morphemes carrying information about lexical category (e.g., noun, verb, adjective), agreement features (e.g., first person plural), and case (e.g., nominative, accusative) features, among others. It is essential to this model that the derivation proceeds from layer one to layer two, and never in reverse order. Layer two morphemes are closing suffixes from the point of word formation.

After the word has been derived by means of morphological processes, it is subject to phonological and semantic interpretation. This results in a number of morphological and phonological readjustment rules, which try to produce a well-formed word by applying allomorphy selection, morphophonological rules and, finally, phonological rules to the output of syntax. This assumption is characteristic of Distributed Morphology (Halle & Marantz 1993). These rules are described later. All in all, the model we purport to use here can be depicted in Figure 1.
The basic architecture of word formation, as depicted by Brattico (2005). In layer one, morphemes are concatenated to each other to result in complex lexemes. This process is implemented by Merge. The derivation is closed by suffixing the word with a layer two morpheme. Only layer two morphemes are compatible with Agree, which combines the word with morphosyntactic features. The outputs of this process cannot be fed back to layer one. Rather, at this point the whole element is subjected to phonological and semantic processing.

The stimulus words were classified into two categories, those which did not violate word formation rules and those which violated them (ungrammatical words). Both categories contained five complexity levels, which were defined by the number of suffixes. This variable ranged thus from one to five. We selected five suffixes as the upper bound, since there are only few marginal words in Finnish containing five derivational morphemes (Karlsson 1983). Complexity level one in the category of grammatical words consisted of control words consisting of a root stem with one legible random suffix. In the category of grammatical words, complexity levels 2, 3, 4 and 5 were constructed by layering level one morphemes and concluding the word with one layer two morpheme. In the ungrammatical condition, the same rules were used, but each word began with one ungrammatical derivation from layer two into layer one. This $2 > 1$ transition violated the rules of grammar, as predicted by Brattico (2005).
The stimuli are summarized in Table 1, where > represents an ungrammatical combination.

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<th></th>
<th>CONTROL</th>
<th>STIMULI</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRAMMATICAL</td>
<td>root + 2</td>
<td>root + 1 + 2, root + 1 + 1 + 2, root + 1 + 1 + 1 + 2,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>root + 1 + 1 + 1 + 2</td>
</tr>
<tr>
<td>UNGRAMMATICAL</td>
<td></td>
<td>root + 2 &gt; 2, root + 2 &gt; 1 + 2, root + 2 &gt; 1 + 1 + 2,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>root + 2 &gt; 1 + 1 + 2</td>
</tr>
</tbody>
</table>

Table 1. Summary of the stimuli used in the experiment. The suffixes were selected randomly by following the rules of Brattico (2005). Symbol “1” refers to layer one morpheme, “2” refers to layer two morpheme.

Note that the ungrammatical 2>1 derivation does not violate any phonological rules of Finnish. We controlled for the frequencies and semantic properties of the base roots such that half of the base roots were randomly selected from high frequency words (lemma frequency range 3267–126 (frequencies per million)) and low frequency range (lemma frequency range 10–7 (frequencies per million)). Half of each group was then divided such that in the first group, the base root was a verbal root (love-) and in the second group it was a nominal root (house-). To test the generative capacity, each word in complexity levels 2–5 was tested against a large corpus of Finnish texts to ensure that it was not in use and with all likelihood was not confronted before the experiment.\(^4\) Bimorphemic words in complexity level 1 constitute an exception to this rule, since some of these items look like regular Finnish words, others less so. Secondly, this complexity does not exist in the category of ungrammatical words, since in order to produce an illegal suffix combination, a minimum of two suffixes are needed. Because of these facts, grammatical words from complexity level 1 are not taken into account when the results are discussed and analyzed, but they nevertheless constitute a control group which should be fully grammatical.

Brattico (2005) does not provide an explicit list of layer one and layer one morphemes, but examines only a few examples. Rather, he proposes

\(^4\) A Finnish corpus composed by the Research Institute for the Languages of Finland, the Finnish IT Centre for Science and Department of General Linguistics, University of Helsinki. The corpus was used through WWW-Lemmie 2.0 at Finnish IT centre for science, obtainable from www.csc.fi/kielipankki.
that if the causative morpheme can be suffixed to some affix (and hence to some stem), then that suffix belongs to the same layer as the causative morpheme (namely, layer 1). If it does not, then either the affix is a layer two affix, or some independent (i.e., morphophonological) rule prevents the output. Based on this test, we selected the following morphemes for our grammar of Finnish words (see Table 2).

<table>
<thead>
<tr>
<th>LAYER 1</th>
<th>S-SELECTION</th>
<th>MEANING</th>
<th>ALLOMORPHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAU[eve]</td>
<td>[ref][eve]</td>
<td>‘to cause to –’</td>
<td>(t)ta, sta, ta</td>
</tr>
<tr>
<td>FRE[eve]</td>
<td>[ref][eve]</td>
<td>‘to do habitually –’</td>
<td>ele, ile, eile, skele</td>
</tr>
<tr>
<td>EVE[ref]</td>
<td>[eve]</td>
<td>‘an event of –’</td>
<td>o, u, y</td>
</tr>
<tr>
<td>REF[ref]</td>
<td>[eve]</td>
<td>‘to become –’</td>
<td>u</td>
</tr>
<tr>
<td>US[ref]</td>
<td>[ref]</td>
<td>‘the property of –’</td>
<td>(u)us</td>
</tr>
<tr>
<td>POSS[ref]</td>
<td>[ref]</td>
<td>‘something which has –’</td>
<td>ll</td>
</tr>
<tr>
<td>COL[ref]</td>
<td>[ref]</td>
<td>‘a collection of –’</td>
<td>(i)sto</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LAYER 2</th>
<th>S-SELECTION</th>
<th>MEANING</th>
<th>ALLOMORPHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINEN[N]</td>
<td>[eve]</td>
<td>‘the property of –ing’</td>
<td>minen</td>
</tr>
<tr>
<td>MA[A]</td>
<td>[eve]</td>
<td>‘the result of –ing’</td>
<td>ma</td>
</tr>
<tr>
<td>VA[A]</td>
<td>[eve]</td>
<td>‘something which does –’</td>
<td>va</td>
</tr>
<tr>
<td>VAINE[A]</td>
<td>[eve]</td>
<td>‘something which does –’</td>
<td>vainen</td>
</tr>
<tr>
<td>A[V]</td>
<td>[eve]</td>
<td>non-finite verb</td>
<td>Ca</td>
</tr>
<tr>
<td>MASSA[V]</td>
<td>[eve]</td>
<td>non-finite verb</td>
<td>massa</td>
</tr>
<tr>
<td>IMP[V]</td>
<td>[eve]</td>
<td>imperative verb</td>
<td>∅</td>
</tr>
<tr>
<td>∅[N]</td>
<td>[ref]</td>
<td>zero derived noun</td>
<td>∅</td>
</tr>
<tr>
<td>INEN[A]</td>
<td>[ref]</td>
<td>‘somebody who has the property of being –’</td>
<td>(i)nen</td>
</tr>
<tr>
<td>MAINEN[A]</td>
<td>[ref]</td>
<td>‘somebody who resembles –’</td>
<td>mainen</td>
</tr>
<tr>
<td>SUUS[N]</td>
<td>[ref]</td>
<td>abstract noun</td>
<td>(i)suus</td>
</tr>
<tr>
<td>KE[N]</td>
<td>[ref]</td>
<td>noun affix with unclear meaning</td>
<td>ke</td>
</tr>
<tr>
<td>TAR[N]</td>
<td>[ref]</td>
<td>‘a female who is –’</td>
<td>tar</td>
</tr>
<tr>
<td>IN[N]</td>
<td>[eve]</td>
<td>‘an instrument for –’</td>
<td>In</td>
</tr>
</tbody>
</table>

Table 2. Morphemes selected for this study. In the left column, we list the symbol for the morpheme together with its semantic classification according to Brattico (2005), [referential] or [eventive]. The next column lists semantic selection restrictions given for the morpheme. Thus, morphemes which select for [eventive] affixes cannot be merged with referential affixes. The third column from the left gives the most typical meaning for the morpheme. This characterization is not exhaustive because many
morphemes can be interpreted in several ways. The right column lists allomorphs which were used in this study. The selection of these allomorphs is a matter of morphological readjustment rules, which we describe later.

See the appendix for the list of words generated by this method. Stimulus words were generated by selecting morphemes from the above list randomly so that only semantic selection restrictions were followed.

Note that in the category of ungrammatical words, the stimulus words were merged with two layer two suffixes to produce a morphologically impossible word. This has the consequence that the words in the group of ungrammatical words at complexity levels 2–5 are approximately one phoneme longer than the words in the category of grammatical words (mean length for grammatical words is 17.9 phonemes and for ungrammatical words 19.3 phonemes, analysis of variance for Grammaticality F(1, 126) = 9.859, p = 0.002, no interaction with Complexity) since layer two morphemes are longer and less fusional. This could be offset by reducing the length of the roots, but the bias itself would remain in the root length. We will analyze the effect of word length in a separate analysis.

After stimulus words had been generated randomly, we needed to generate a concrete phonological form for them. This requires allomorph selection and the application of phonological and in some cases morphophonological readjustment rules (PF in Figure 1). The rules used in this study were as follows:

**CONSONANT GRADATION (CG).** Weaken the consonant(s) in the last syllable of the lexeme if the suffixation changes the syllabification of the stem. This rule is applied also in the case of an imperative suffix, even if the suffix does not have an overt morphological exponent (1c) (Karlsson 1983: 322–324).

(1)  
\[
\begin{array}{llll}
\text{a. } & \text{lotta} & > & \text{lota} \text{-}n, \text{ lota} \text{-lla}, \text{ lotta-mainen} \\
& \text{lotta-NOM} & > & \text{Lotta-GEN} \text{ lotta} \text{-ELA} \text{ lotta-like} \\
& \text{‘proper name} & > & \text{Lotta’}, \text{ in Lotta’s possession, like a Lotta’} \\
\text{b. } & \text{paalu-tta} & -a & > & \text{paalu} \text{-ta} \text{-tta} \text{-a}, \text{ paalu-tta} \text{-minen} \\
& \text{pole -cau -v} & > & \text{pole -cau -cau -v}, \text{ pole -cau -n} \\
& \text{‘to pole} & > & \text{to cause to pole, causing to pole’} \\
\text{c. } & \text{töikki} & -ää & > & \text{töki} \text{-tä} \text{-ä}, \text{ tökki -minen, töki!} \\
& \text{push -v} & > & \text{push -CAU -V} \text{ push -ING} \text{ push-IMP} \\
& \text{‘to push,} & > & \text{to cause to push, pushing, push!’}
\end{array}
\]
VOWEL FUSION (VF). If the morpheme begins with a vowel, it replaces the vowels (if any) at the end of the previous morpheme.

(2) a. *juoksu -tt -in > juoksutin, juokse-u > juoksu*
   run -CAU -INST > run-U
   ‘an instrument to cause to run, a run’

b. *monista-e > moniste*
   copy-E > copy-E
   ‘the result of copying’

c. *lastaa-e > laste*
   load-E
   ‘the result of loading’

VOWEL INSERTION (VI). If the merging of two morphemes produces an impossible consonant cluster, such as /sll/, insert vowel /i/ or /e/ between.

(3) a. *hevos-mies, hevos-llinen > hevos -e -llinen*
   horse -man, horse -LLINEN > horse -e -LLINEN
   ‘a horse man, a horse owner’

b. *talous -ennuste, talous -llinen > taloud-e-llinen*
   economy -forecast, economy -LLINEN
   ‘economy forecast, economical’


(4) a. *talo -ssa, pää -ssä*
   house -INE head -INE
   ‘in the house, in the head’

b. *paalu-tta -a, pää -ttā -ā*
   pole -CAU -V, head -CAU -V
   ‘to cause to pole, to cause to have / be a head / to decide’

IDIOMATIC RULES (IR). (a) -us+ele- = -uskele-. (b) one-syllable root+ele = root-skele.

A total of 9 x 16 = 144 words were first generated. Eight pseudowords which were suffixed with layer two morphemes were used as filler items. A
total of 152 words were used, but three were removed from the analysis since later it was found that there was an error in the generation. A list of all stimulus words can be found in the appendix.

3.2 Procedure

The experiment consisted of two separate tasks: one grammaticality and one semantic judgment task. Half of the subjects performed first the semantic judgment task for all words and thereafter the grammaticality judgment task, likewise for all words; the second half performed the semantic judgment task and the grammaticality task in the opposite order. Both word lists were randomized for each subject. The same stimuli were used in both tasks. Prior to each test, the instructions were given on paper and on a computer screen. In both tasks the visual stimuli were presented one at a time on a PC computer screen, commanded by a script written in Presentation 9.90 (Neurobehavioral Systems, Albany, USA). In both tasks, each word was centrally displayed on the monitor, formatted with black, 72-point Times New Roman font on a gray screen.

During the semantic judgment task, the subjects’ task was to assess the meaning of each word by describing verbally one or more situations in which that word could be used. After the word was presented on the screen, the subjects described the meaning of that word and then pressed the green key on the keyboard. They were instructed to press the red key if they could not give any meaning for the word. In each trial, the response wait time would time out after one minute. Following the answer or time-out, the blank grey screen was displayed for 1500 ms before the next word was presented. The verbal meaning descriptions were recorded using an ElectroVoice MC100 microphone (Telex Communications Inc., USA), which was connected to a Sony Digital Handycam DCR-VX1000E video camera. The semantic judgment test comprised 152 trials and lasted approximately 45 minutes.

During the grammaticality judgment task, the subjects were instructed to press one of five keys on a keyboard after the stimulus was presented. Key 5 was to be pressed when a stimulus was assessed as a grammatical Finnish word and key 1 to be pressed when a stimulus was judged as an ungrammatical Finnish word. The trials were constructed such that a response wait time for each stimulus would time out after one minute (as in the semantic judgment task), and the next stimulus was presented 1500 ms
after the response or time-out. The task consisted of 152 trials, and this task lasted approximately ten minutes.

### 3.3 Subjects

Twenty six adults, 13 men and 13 women, volunteered as participants. 22 participants were university students, while four additional participants had a university degree. The mean age of the participants was 26.3 years (SD = 9.6, range 19–58 years). All participants had normal or corrected-to-normal vision and none of them reported any linguistic dysfunctions. All subjects were native speakers of Finnish. The participants received two movie tickets for participation.

### 3.4 Statistical methods

The effects of two independent variables, Complexity (4 levels, 1, 2, 3 and 4) and Grammaticality (2 levels, grammatical and ungrammatical), were assessed using three dependent variables, grammaticality judgments, semanticality judgments and reaction times, both with an analysis of variance (ANOVA) in an item-based analysis and with a repeated measures ANOVA in a participant-based analysis (see below). Within-subject contrasts in the repeated measures ANOVA were used to assess whether the relationship between complexity and grammaticality was linear or non-linear. Post-hoc comparisons were computed with ANOVA for both grammatical and ungrammatical words, separately. Reaction times were correlated with grammaticality judgments within each complexity level in the category of grammatical words. Finally, we construed a linear regression model to assess how much complexity and reaction time explain the variance in grammaticality judgments.

The data were analysed both on a item-based analysis, where each stimulus item was attributed one grammaticality and semanticality value, as averaged from all subjects, and on a participant-based analysis, where each subject was attributed one grammaticality and semanticality value in each experimental condition (Grammaticality x Complexity). An item-based analysis is suitable when the interest is on the linguistic properties of the words themselves, and this is the most relevant for the present purposes since we aim at comparing two linguistic models of word formation. In this analysis, the source of variation comes from the stimulus items whose
properties the theoretical models are trying to predict. The values obtained are reported in the appendix along with the stimulus words along with figures are drawn based on these results. In the participant-based analysis, the source of variation comes from the between-subject differences and thus reflects the amount that the subjects differ from each other in the experimental task.

The semanticality value (0–1) represents the frequency that the given word was assigned a semantic interpretation, whereas the grammaticality value represents the mean grammaticality value provided by the subjects (1–5). The statistical analyses assume that the obtained numerical scales, 0–1 for semanticality and 1–5 for grammaticality, are interpreted as interval scales. This assumption holds for the frequency of semantic interpretation, but not necessarily for the given grammaticality intuitions as it is not clear how the various values (1, 2, 3, 4 and 5) relate to each other. For the grammaticality assessments, the minimal assumption is that the given numbers come from an ordinal scale. Nonparametric tests should be used if the assumption of the interval scale does not hold, and therefore the data were additionally analyzed with the Kruskall-Wallis non-parametric test.

In the semantic task, three subjects pressed the same button for each stimulus item presumably because they forgot the task instructions. These data were removed before analysing the frequency of semantic interpretation. However, their grammaticality judgments and reaction times were in line with the other subjects, and thus the grammaticality judgment data was not removed.

4. Results and discussion

Item-based analysis. The main results of this experiment are shown in Figure 2 and described below in detail.
Figure 2. The main results of the present experiment. Top row. The mean grammaticality judgments (with the standard error of the mean) for both grammatical (A) and ungrammatical (B) words as a function of Complexity. Middle row. The mean semanticality (with s.e.m.) for both grammatical (C) and ungrammatical (D) words as a
function of Complexity. Semanticality refers to the frequency that the words in a given category obtained a semantic analysis. Bottom row. Mean reaction times in seconds for grammatical (E) and ungrammatical (F) words in a grammaticality task. The means and the standard error of the mean are taken from the participant-based analysis, reported later.

With respect of grammaticality judgments, ANOVA revealed a statistically significant main effect for Complexity $[F(3, 118) = 36.388, p < 0.001]$ due to the fact that grammaticality values decreased as a function of complexity. The main effect for Grammaticality was also significant $[F(1, 118) = 142.226, p < 0.001]$ due to the fact that morphologically ungrammatical words were judged as highly deviant. The interaction between Complexity and Grammaticality was significant $[F(3, 118) = 18.706, p < 0.001]$ due to the fact that, contrary to the category of grammatical words where the effect was clear and linear, complexity had only sporadic and marginal effect on grammaticality judgments in the category of ungrammatical words. (Post-hoc comparisons with ANOVA showed that there was a significant difference in the grammaticality judgments between complexity levels two and five in the category of ungrammatical words $[p = 0.028]$, but no other significant differences were found. In contrast, in the category of grammatical words the same test revealed that the difference between complexity levels two and three $[p = 0.094]$ and four and five $[p = 0.08]$ was not significant, but the rest of the comparisons were significant. These results were Bonferroni corrected for multiple comparisons.) Within-subjects contrasts of the repeated measurements analysis of variance (rmANOVA) were used to assess whether grammaticality falls in a non-linear manner as a function of complexity. This analysis confirms that the relationship between complexity and grammaticality in the category of grammatical words was linear $[F(1, 25) = 603.274, p < 0.001]$ and neither quadratic $[F(1, 25) = 1.566, p = 0.222]$ nor cubic $[F(1, 25) = 2.431, p = 0.132]$.

The mean grammaticality estimation in the group of ungrammatical words was 1.74, whereas the mean grammaticality value in the category of grammatical words in complexity level 5 was 1.79. These groups did not differ from each other in terms of their grammaticality $[\text{Grammaticality } F(1, 78) = 0.123, p = 0.727]$. The mean grammaticality in the category of grammatical words at complexity level 4 was 2.36, while this group differed from the group of ungrammatical words $[\text{Grammaticality } F(1, 78) = 24.876, p < 0.001]$. Thus, the limit of morphological productivity in
Finnish settles down at six morphemes (five semantically random suffixes), which agrees well with other assessments (Karlsson 1983).

However, the assumption of equal variance did not hold for our data \(p < 0.001\) and it is neither obvious nor reasonable that the participants understood the 1–5 scale as an interval scale. Non-parametric tests were used for this reason. These tests showed a significant effect of Complexity to the grammaticality intuitions in the category of grammatical words \(\chi^2(4) = 60.026, p < 0.001\). Also, Grammaticality had a significant effect on grammaticality intuitions \(\chi^2(1) = 57.268, p < 0.001\) in that ungrammatical words were rated as less grammatical than the Grammatical words.

With respect of semanticality judgments, i.e. the frequency that the given stimulus word was provided a semantic analysis, there was a statistical significant effect for Complexity \(F(3, 118) = 25.214, p < 0.001\) because the more complex words were interpreted less frequently, Grammaticality \(F(1, 118) = 125.069, p < 0.001\) since ungrammatical words were virtually never provided a semantic interpretation, and for the interaction between Complexity and Grammaticality \(F(3, 118) = 9.773, p < 0.001\) due to the fact that Complexity had only a slight effect in the category of ungrammatical words. (Post-hoc comparisons with ANOVA for ungrammatical words revealed that there was a significant difference only between complexity levels two and four \(p = 0.037\) and two and five \(p = 0.005\). In contrast, the same test for grammatical words revealed that there were three cases where no significant difference was observed, complexity levels one versus two \(p = 0.054\), two versus three \(p = 0.764\) and four versus six \(p = 1\). These results were Bonferroni corrected for multiple comparisons.)

With respect of reaction times for the grammaticality judgments, there were statistical significant effects for Complexity \(F(3, 118) = 26.246, p < 0.001\) in that more complex words took longer to rate, and the interaction between Complexity and Grammaticality was also significant \(F(3, 118) = 6.588, p < 0.001\) because this trend was absent in the category of ungrammatical words. However, Grammaticality had no significant effect on the reaction times \(F(1, 118) = 1.094, p = 0.298\). We also found that within complexity levels 1 and 2 reaction times correlated negatively with grammaticality judgments within each complexity level in the category of grammatical words (complexity class 1, Pearson correlation -0.72, \(p = 0.003\), complexity class 2, -0.535, \(p = 0.033\), suggesting that processing
difficulties are directly related to grammaticality in the category of grammatical words.

On the basis of these results, a linear regression model was constructed with grammaticality as the dependent variable, and complexity and processing time as independent variables. This analysis reveals that complexity and processing time explain in a linear model $R^2_a = 78\%$ the total variance in grammaticality judgments for grammatical words ($F(2, 76) = 142.602, p < .001$) and $R^2_a = 10\%$ in the category of ungrammatical words ($F(2, 62) = 4.747, p = 0.012$).

Participant-based analysis. With respect of grammaticality intuitions, a repeated measures analysis of variance (rmANOVA) revealed a significant effect for Grammaticality $[F(1, 25) = 205.782, p < 0.001]$ and Complexity $[F(3, 75) = 179.868, p < 0.001]$. This was because ungrammatical words were rated as highly deviant and unsemantical, and because the increase in complexity caused a linear drop in grammaticality and semanticality intuitions. Also the interaction between Grammaticality and Complexity was significant $[F(3, 75) = 93.086, p < 0.001]$, because complexity did not have a similar effect in the category of ungrammatical words (see Figure 2). With respect of semanticality intuitions, Grammaticality $[F(1, 25) = 54.972, p < 0.001]$, Complexity $[F(3, 75) = 48.360, p < 0.001]$ and the interaction between Grammaticality and Complexity $[F(3, 75) = 23.222, p < 0.001]$ were significant. With respect of reaction times in the grammaticality task, Grammaticality $[F(1, 25) = 4.573, p = 0.042]$, Complexity $[F(3, 75) = 25.405, p = 0.008]$ and the interaction between Grammaticality and Complexity $[F(3, 75) = 14.998, p < 0.001]$ were significant.

To ensure that the explaining feature was complexity and processing time alone, we performed a number of other tests. We investigated whether the presence or absence of certain specific morphemes correlates with reaction time in the grammaticality judgment task, thus whether some of the specific morphemes were more difficult to process than others. No such morphemes were found. In the group of control words (complexity level 1), the dictionary form was correlated with shorter reaction times [Pearson correlation -0.639, $p = 0.008$].

Due to the large amount of correlations (126), we report only correlations where $p < 0.01$. Five other morphemes were associated with lower or higher reaction times at various levels, but these findings were not robust statistically ($p > 0.01$).
One possibility for the sharp difference between ungrammatical and grammatical words is that the stimulus words in the category of ungrammatical words were ungrammatical because of some quickly detectible surface property, such as a violation of a phonological rule. We took some care to keeps this from happening in the stimulus construction. Another evidence which points to the same conclusion concerns reaction times, since the processing of grammatical and ungrammatical words took the same amount of time [independent samples t-test for grammatical and ungrammatical words t(124) = 0.533, p = 0.595]. Thus, ungrammatical words were not recognized as such by means of a simple surface property; rather, the subjects had to parse these words as well.

Because morphemic complexity correlates with absolute length of the words, one could argue that the complexity effect is based on the length of the word, not the number of morphemes it contains. This by itself would not disprove the existence of a complexity effect as compared to the ungrammatical words, but it would show that our decision to count the number of morphemes was misleading. This hypothesis predicts that there should be a correlation between word length and grammaticality also within each complexity level. At complexity level three, longer words were associated with lower grammaticality judgments [Pearson correlations -0.575, p = 0.031], but no such correlations were found from other complexity levels.

Due to the stimulus generation, ungrammatical words were phonologically slightly longer than grammatical words. Thus, one could argue that the main effect of Grammaticality to the grammaticality and semanticality intuitions was due to the difference in phonological length and not due to the presence of illegal morpheme combination. This hypothesis predicts that within each complexity level, word length predicts grammaticality intuitions better than Grammaticality. We tested this hypothesis by assessing how much of the variance in grammaticality judgments within each complexity level is predicted by grammaticality and word length. This analysis shows that whereas Grammaticality predicts grammaticality judgments within complexity levels 2–5 [level 2: $R_a^2 = 67\%$, $F(1, 31) = 63.480$, $p < 0.001$, level 3: $R_a^2 = 65\%$, $F(1, 29) = 61.399$, $p < 0.001$, level 4: $R_a^2 = 30\%$, $F(1, 31) = 14.527$, $p = 0.001$, level 5: $R_a^2 = 18\%$, $F(1, 31) = 7.749$, $p = 0.009$], word length does not [level 3: $R_a^2 = 2\%$, $F(1, 31) = 1.730$, $p = 0.198$, level 4: $R_a^2 = 17 \%$, $F(1, 29) = 7.182$, $p = 0.012$, level 5: $R_a^2 = 8\%$, $F(1, 31) = 3.731$, $p = 0.063$, level 6: $R_a^2 = 1\%$, $F(1, 31) =
1.396, p = 0.247]. Hence, the hypothesis that it is the word length which explains grammaticality intuitions receives no support from our data.

One possible hypothesis is that the presence of one or several specific morphemes explains variation in grammaticality, rather than the number of morphemes whatever their form and meaning. We correlated grammaticality judgments with the presence of specific layer one morphemes within each complexity level in the category of grammatical words. At complexity level 5, we found that the presence of a reflexive suffix correlated with higher grammaticality judgments [Pearson correlation 0.698, p = 0.003]. Two other weak correlations were found (at level 4, the presence of a possessive suffix correlated positively with the grammaticality judgments, Pearson correlation 0.531, p = 0.041 and at level 5 the presence of a possessive correlated negatively with the grammaticality judgments, Pearson correlation -0.523, p = 0.037).

These results show that morphological productivity is limited to five random derivational suffixes in Finnish. Nevertheless, the suffixes themselves were generated by fully productive and recursive rules by applying random iteration. This result agrees quite well with Karlsson (1983), who cites only few examples of Finnish words with five derivational suffixes but no words which contain additional suffixes. It disagrees with this model, however, in that we found no evidence for fixed morphotactic positions: we found no trace of a threshold effect which would drop grammaticality abruptly at certain fixed points; rather, each suffix caused a constant reduction of the grammaticality and semanticality, independent of its morphotactic position.

Because Finnish is morphologically productive, we may regard this result as an estimation of the upper bound of morphological creativity at least for derivation. This effect stands in sharp contrast with the effect of violating a strict word formation rule. Such a violation produces gibberish independent of the number of morphemes. In effect, it seems to us then that the two factors which influence grammaticality in word formation have to be distinguished. On the other hand, there are strict word formation rules which dissolve the set of phonologically possible words into those which are morphologically possible and those which are not possible. The category of morphological and phonologically possible words is further constrained by complexity, but this effect is graded rather than binary. The explanation for both factors is thus likely to be different.
5. Conclusions

The creative periphery of word formation capacity has remained a controversial and little studied topic both in linguistic and psycholinguistic research. In this paper we contrasted two models of productive word formation: one which assumes that word formation is based on a fixed number of morpheme positions and another which assumes that the underlying mechanism is generative. Our evidence supports the latter model. More specifically, we presented evidence that word formation is subject to two factors: a possibly generative word formation capacity which is regulated by hard constraints that appear to be non-violable and not sensitive to complexity, and a complexity effect which restricts the interpretation and use of complex words made possible by word formation competence alone. The complexity effect remains constant over all morpheme positions, suggesting that the addition of each morpheme to the word contributes an equal amount to the effect.

Appendix: List of stimulus words, complexity level, grammaticality and semanticality estimations

Table 3. Stimulus words in the category of grammatical words, together with the grammaticality estimation (with the standard deviation from the mean) and the frequency of semantic interpretation (with the standard deviation from the mean).

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<th>SEMANTICALITY</th>
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Table 4. Stimulus words in the category of ungrammatical words, together with the grammaticality estimation and the frequency of semantic interpretation.

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<td>1.65</td>
<td>1.09</td>
</tr>
<tr>
<td>luolaisuususillimainen</td>
<td>4</td>
<td>1.69</td>
<td>1.04</td>
</tr>
<tr>
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<td>4</td>
<td>2.35</td>
<td>1.26</td>
</tr>
<tr>
<td>laitinstoiletin</td>
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<td>1.62</td>
<td>1.17</td>
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<tr>
<td>torjumallustaminen</td>
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<td>2.08</td>
<td>1.17</td>
</tr>
<tr>
<td>lentäväinenskeletätäma</td>
<td>5</td>
<td>1.27</td>
<td>1.04</td>
</tr>
<tr>
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<td>5</td>
<td>1.73</td>
<td>1.13</td>
</tr>
<tr>
<td>huollinstousto</td>
<td>5</td>
<td>1.69</td>
<td>1.22</td>
</tr>
<tr>
<td>sysääväinenmuskeluinen</td>
<td>5</td>
<td>1.35</td>
<td>1.09</td>
</tr>
<tr>
<td>hierrinillustotar</td>
<td>5</td>
<td>1.50</td>
<td>1.13</td>
</tr>
<tr>
<td>pestamaustollistar</td>
<td>5</td>
<td>1.38</td>
<td>1.22</td>
</tr>
<tr>
<td>eläinincteusmainen</td>
<td>5</td>
<td>1.85</td>
<td>1.04</td>
</tr>
<tr>
<td>taitoinenskelusto</td>
<td>5</td>
<td>1.46</td>
<td>1.04</td>
</tr>
<tr>
<td>iskuisuudeleskelettamassa</td>
<td>5</td>
<td>1.27</td>
<td>1.09</td>
</tr>
<tr>
<td>vanhusmainennukselleskeleminen</td>
<td>5</td>
<td>1.50</td>
<td>1.04</td>
</tr>
<tr>
<td>syketärtellistar</td>
<td>5</td>
<td>1.31</td>
<td>1.09</td>
</tr>
</tbody>
</table>
lohtuinenellistama  5  1.35  1.04
sirkussuudittelilema  5  1.19  1.13
päätyinenelliskeletin  5  1.04  1.05

References


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Samir Diouny

Tense/agreement in Moroccan Arabic: The Tree-Pruning Hypothesis

Abstract

The present study presents results from picture description, sentence completion and grammaticality judgment tasks with four MA-speaking Broca’s aphasic subjects and four age, sex, and education matched control subjects investigating tense and agreement markers. Specifically, the study explores tense and agreement disassociation in agrammatic speakers of Moroccan Arabic as predicted by the Tree-Pruning Hypothesis (Friedmann & Grodzinsky 1997) with extension of the inquiry to determine whether the disassociation is production-specific and/or modality-specific. For all experimental tasks, it was found out that the 4 MA-speaking Broca’s aphasic subjects achieved high correctness scores for agreement, while tense was impaired. The results of the study suggest that the tense/agreement dissociation reported for Hebrew (Friedmann & Grodzinsky 1997) and German (Wenzlaff & Clahsen 2004) can be replicated in Moroccan Arabic. However, the syntactic account as outlined in Friedmann and Grodzinsky (1997) cannot account for the tense/agreement dissociation because Moroccan Arabic has the agreement node above the tense node. Based on results from the study, it is argued that the production deficit in Moroccan Arabic agrammatism cannot be explained in terms of the Tree-Pruning Hypothesis, but rather in terms of a processing account that takes the view that access to syntactic knowledge is blocked; grammatical knowledge, however, is entirely intact.

1. Introduction

Agrammatism, an acquired language disorder resulting from left hemisphere brain damage, is characterised by slow and halting speech, reduction of phrase length and of syntactic complexity. One of the most puzzling dissociations in the literature on agrammatism is the apparent dissociation between the production of tense and agreement. Agrammatic subjects are not able to inflect verbs correctly for tense markers, but their ability to inflect nouns and adjectives is relatively intact (Friedmann & Grodzinsky 1997). This pattern is open to cross-linguistic variation. For example, Hebrew and Palestinian Arabic-speaking agrammatic speakers are
sensitive to tense and agreement violations, but their German counterparts are not (Friedmann 2001, 2006). Cross-linguistic investigations of agrammatic aphasia are not only of utmost importance as they allow the examination of brain/language relations, but also, are currently at the forefront, due to theoretical developments in linguistic theory (i.e., the Minimalist Program, Chomsky 1995, 2000), as well as to some progress that has been made in the neuropsychology of language (Grodzinsky 2000; Gavarro 2002, Friedmann 2006).

There is ample evidence from a wide range of studies on different languages that tense is more impaired than agreement in agrammatic production (Kolk et al. 1990, Nespoulous et al. 1990, Friedmann & Grodzinsky 1997, Benedet et al. 1998). Nespoulous et al. (1990) investigated the production abilities of their French-speaking agrammatic subject, Mr. Clement. They found out that he had only tense errors, which involved substituting a finite form with an infinitive form, but had no agreement errors. Benedet et al. (1998) found out that their six Spanish-speaking subjects produced better subject–verb agreement (63.8%), but worse verbal tense (5.5%). The English-speaking agrammatics, however, produced 42% correct agreement and about 15% correct tense. Ferreiro (2003) investigated tense and agreement in 14 Catalan and Spanish-speaking agrammatic subjects. He found out that tense was more impaired than agreement.

A prominent syntactic account that has been proposed to explain this dissociation is the Tree Pruning Hypothesis (TPH) (Friedmann & Grodzinsky 1997). Following Pollock (1989), Friedmann and Grodzinsky (1997) assume that tense and agreement are represented as separate functional categories, with AgrP located below TP. The TPH claims that agrammatic phrase-structure representations are pruned at the TP layer yielding phrase-structure trees without TP or any other functional category above TP. This then explains why subject-verb agreement is preserved (Agr-nodes are located lower than C-nodes); whereas tense marking and CP related phenomena are impaired in agrammatic production. In this respect, Friedmann and Grodzinsky (1997), Friedmann (2000) and Grodzinsky (2000) reported the case of Hebrew and Arabic-speaking subjects who made a lot of tense errors (42.4%) but very few agreement errors (3.9%). Since the tense node is impaired, no other nodes or functional projections (i.e., comp) can project. Kolk (1998) contends that
“if a patient has impairment with respect to a particular node, higher levels are also affected because, in the process of verb movement, the verb can not cross over the impaired node.”

The tense/agreement dissociation has been confirmed in a number of production studies. Wenzlaff and Clahsen (2004) examined the verbal production of tense and agreement in seven German-speaking agrammatic subjects in sentence completion and grammaticality judgment tasks. Their subjects performed worse on tense (57.5%) than on agreement (81.4%). However, they found out that the dissociation between tense and agreement holds for grammaticality judgment as well. The seven German-speaking agrammatic subjects had greater difficulty detecting tense violations than detecting agreement violations. This finding pushed Wenzlaff and Clahsen to suggest that German agrammatism results from a “central representational deficit” affecting both production and grammaticality judgment. This seems to suggest that difficulties with tense are modality-independent.

Wenzlaff and Clahsen’s (2004) study presents results from sentence-completion and grammaticality-judgment tasks with 7 German-speaking agrammatic aphasics and 7 age-matched control subjects examining verb finiteness marking and verb-second (V2) placement. The patients were found to be selectively impaired in tense marking in the face of preserved mood and agreement marking.

Similarly, in a study carried out on Greek agrammatism, Stavrakaki and Kouvava (2003) reported that in their two Greek-speaking subjects obtained almost perfect performance on both tense and agreement with 15% error rate in spontaneous speech. In grammaticality judgment, their patient 1 made 2/10 errors when presented with past tense sentences, and 1/10 when judging correct and incorrect subject/verb agreement. Their second subject made one error when judging incorrect past tense form. Stavrakaki and Kouvava concluded that tense and agreement were available to the two subjects in an equal way.

The theoretical assumptions made by the TPH are questionable, however. No current syntactic theory treats AgrP and TP as separate functional categories and posits a fixed hierarchy of functional categories for CP-TP-AgrP-VP. While these claims were originally made by Pollock (1989) within Government-Binding Theory (Chomsky 1981), Chomsky (2000) argues that agreement and tense are fundamentally different
syntactic concepts, with tense being an interpretable feature of the syntactic category T, and agreement not forming a functional category of its own. Instead, Agree is conceived of as an operation that establishes a structural relationship between, for example, the person and number features of a clausal subject and the corresponding uninterpretable features of a finite verb, which are checked by T. Thus, if T is pruned in the agrammatic phrase-structure tree (which according to the TPH accounts for impaired tense marking), Agree should not be able to operate because the host for a verb’s person and number features (= T) has been deleted. This means that an impairment of tense should co-occur with impairments in agreement thus making it hard for the TPH to explain a selective impairment in tense.

Much research on agrammatic aphasia has been carried out primarily on English-speaking aphasic subjects. In contrast, very little data is available in the Arabic languages (Minouni & Jarema 1997) none whatsoever on Moroccan Arabic. Moroccan Arabic serves as excellent testing ground for verb and agreement inflections because it has a rich inflectional morphology with relatively free word order. The study of grammatical deficits in Moroccan Arabic can enhance our scientific knowledge of language processing, placed within the framework of comparative aphasiology.

The present study explores the tense/agreement disassociation in Broca’s speakers of Moroccan Arabic as predicted by the Tree-Pruning Hypothesis (Friedmann & Grodzinsky 1997) with extension of the inquiry to determine whether the disassociation is production specific. The aim of the study is three-fold: (1) to assess the 4 participants’ ability to inflect verbs and copulas for tense and agreement markers, and nouns and adjectives for person and number agreements; (2) to examine whether inflectional and agreement markers undergo omission and/or substitution (Friedmann & Grodzinsky 1997; Friedmann 2000, 2001; Grodzinsky 2000); (3) and to investigate whether there is a parallelism between the production of tense and agreement and grammaticality judgment tasks.

### 1.1 Verbal Morphology in Moroccan Arabic

Verbs in MA have a complex morphology. They follow derived form patterns and each form is conjugated into the perfect tense or the imperfect tense. The two tenses share the grammatical categories of person and
number, and gender. The perfect tense is formed by a set of suffixes added to the verb stem. The imperfect tense is formed by a set of prefixes in the singular and by the same set of prefixes plus a set of suffixes in the plural. There is no dual or gender distinction in the plural form. The perfective is suffixal; the imperfective is signaled by suffixes and prefixes. The two paradigms for MA are illustrated by tables 1 and 2.

<table>
<thead>
<tr>
<th>Person</th>
<th>Number</th>
<th>Gender</th>
<th>Affix</th>
<th>Verb+affix</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Singular</td>
<td>M/F</td>
<td>-t</td>
<td>ktəb-t</td>
</tr>
<tr>
<td>2</td>
<td>Singular</td>
<td>M/F</td>
<td>-ti</td>
<td>ktəb-ti</td>
</tr>
<tr>
<td>3</td>
<td>Singular</td>
<td>M</td>
<td>Ø</td>
<td>ktəb</td>
</tr>
<tr>
<td>3</td>
<td>Singular</td>
<td>F</td>
<td>-ət</td>
<td>kətb-ət</td>
</tr>
<tr>
<td>1</td>
<td>Plural</td>
<td>M/F</td>
<td>-na</td>
<td>ktəb-na</td>
</tr>
<tr>
<td>2</td>
<td>Plural</td>
<td>M/F</td>
<td>-tu</td>
<td>ktəb-tu</td>
</tr>
<tr>
<td>3</td>
<td>Plural</td>
<td>M/F</td>
<td>-u</td>
<td>kətb-u</td>
</tr>
</tbody>
</table>

Table 1. The perfective paradigm
2. Design and materials

2.1 Subjects

Four MA-speaking subjects, 2 males and 2 females, were identified through healthcare facilities at hôpital des spécialités, service de neurology, Rabat. The participants were evaluated and diagnosed as Broca’s aphasics using the Moroccan Arabic version of the Boston Diagnostic Aphasia Examination (BDAE) (El Alaoui Faris et al. Ms.). The selected participants were right–handed native speakers of Moroccan Arabic, presented with a left hemisphere lesion and revealed features prototypical of agrammatic speech output, namely, simplified syntactic structure, effortful, non-fluent telegraphic speech, and omission and/or substitution of closed class elements. As shown in table 1, the participants ranged in age from 43 to 52, time post-onset ranged from 1 and 11 years and education ranged from 12 to 15 years. Auditory and visual processing were sufficient to complete the experimental tasks based on visual field testing and performance in connected speech. Four neurologically normal subjects were matched to
each individual with Broca’s aphasia on the basis of age, gender, education. Table 3 presents background information on the aphasic subjects.

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Age</th>
<th>Gender</th>
<th>Work</th>
<th>Education</th>
<th>Etiology of brain damage</th>
<th>Site of brain damage</th>
<th>Post-onset</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>47</td>
<td>M</td>
<td>teacher</td>
<td>+12</td>
<td>stroke</td>
<td>left fronto-temporal-parietal infarct</td>
<td>11 years</td>
<td>Broca’s aphasia</td>
</tr>
<tr>
<td>A2</td>
<td>43</td>
<td>F</td>
<td>teacher</td>
<td>+12</td>
<td>stroke</td>
<td>left frontal infarct</td>
<td>1 year</td>
<td>Broca’s aphasia</td>
</tr>
<tr>
<td>A3</td>
<td>45</td>
<td>F</td>
<td>house wife</td>
<td>+15</td>
<td>stroke</td>
<td>left fronto-parietal infarct</td>
<td>3 years</td>
<td>Broca’s aphasia</td>
</tr>
<tr>
<td>A4</td>
<td>51</td>
<td>M</td>
<td>teacher</td>
<td>+15</td>
<td>stroke</td>
<td>left fronto-temporal-parietal infarct</td>
<td>1 year</td>
<td>Broca’s aphasia</td>
</tr>
</tbody>
</table>

Table 3. Demographic information (aphasic subjects)

2.2 Tasks

The availability of tense and agreement features was investigated using picture description, repetition, sentence completion, and grammaticality judgment tasks. In the picture description task, the 4 MA-speaking agrammatic subjects were presented with the “the cookie theft picture” from the Boston Diagnostic Aphasia Examination (Kaplan & Goodglass 1983).

The purpose of the repetition task was to investigate the subjects’ ability to produce verbs of different paradigms and copulas inflected for tense and agreement, and nouns and adjectives inflected for gender and
The question that the repetition task addressed was whether there was disassociation between tense inflection and agreement inflection. In the repetition task, participants were asked to repeat a total number of 67 utterances consisting of words and sentences; the list of words included singular and plural nouns, feminine and masculine adjectives, and verbs. The sentences varied in length and complexity. They included verbs and copulas, inflected for tense and agreement, and nouns and adjectives inflected for number and gender agreement markers (see appendix). In the sentence completion tasks, two kinds of sentence completion tasks were administered to the subjects. In the first task, the subjects had to choose between two verbs to fill out the missing part: one verb was correctly inflected for tense and agreement, while the other was not. In (1) the verb “xəɔʒ-ɔt” agrees with the grammatical subject “lβɔnt” in gender, person and number. Agreement is expressed through suffixation of the feminine marker “ɔt” to the verb “xəɔʒ”.

(1) lβɔnt → a- xəɔʒ b- xəɔʒ-ɔt
    the girl  leave-past, he      leave-past she
      ‘the girl’ ‘left-masc’  ‘left-fem’

Another variant of the sentence completion task consisted of two coordinated VPs (i.e., a source sentence, and a target sentence), only one of which was fully inflected for tense and agreement. The subjects had to supply the missing verb of the second VP. Copying the features of the first VP was necessary to yield the required structure as example (2) shows.

(2) rraɔʒɔl ʁadi w ɬə-ɔrɔ (tβɔɾ)
    the man is walking and the woman (follow)
      ‘the man is walking and the woman is following him’

The grammaticality judgment tasks investigated whether a parallel pattern of impairment exists in grammaticality judgment, too. Two grammaticality judgment tests were administered to the participants to examine their ability to detect tense and agreement violations: free judgment and contrastive judgment. Tense and agreement violations were tested on verbs and copulas. In free judgment (3), twenty sentences were presented orally
to the four MA-speaking agrammatic subjects. They had to decide which of the sentences presented to them were grammatical or ungrammatical. In contrastive judgment (4), the subjects were presented with a total number of twenty sentence pairs, each of which consisting of a grammatical sentence and an ungrammatical sentence. The subjects had to choose the grammatical sentence in each pair.

(3) Free judgment

\* \textit{l-bont} \hspace{1cm} m\text{i}a
the girl-fem. \hspace{1cm} go out-past masc.
‘The girl went out’

(4) Contrastive judgment

a. \*m\text{i}l\text{\~a}-t \hspace{1cm} l-w\text{\~a}d
go out-past fem. she \hspace{1cm} the boy-masc.
‘the boy went out-fem’

b. m\text{i}a \hspace{1cm} l-w\text{\~a}d
go out-past, masc. he \hspace{1cm} the boy-masc.
‘The boy went out-masc.’

3. Results

3.1 Picture description

Results of picture description are given in table 3. Let us first consider the number of utterances and the percentage of grammatical sentences. All subjects, except “A3”, produced nine utterances. However, only few utterances have a sentence level status. A sentence is grammatical if it contains a verb correctly inflected for tense and must agree with subject. “A3” is an exception since she produced three utterances, all of which were sentences. The other patients scored differently on this particular task. “A1”, being a severe agrammatic, produced a rate of 33% sentences, “A2” and “A4,” however, scored 67% and 60%, respectively. The percentage of grammatical sentences differs from one patient to another. “A1” got a score
of 11% while “A4” got 20%. “A2” produced 44%. A3’s performance was normal, with a rate of 100%. Noun production ranges from 6 to 15, while verb production ranges from 3 to 6. Overall, the performance of the four MA-speaking agrammatic subjects was worse than their control counterparts.

<table>
<thead>
<tr>
<th>Agrammatic subjects</th>
<th>Number of utterances</th>
<th>Percentage of utterances as sentences</th>
<th>Percentage of grammatical sentences</th>
<th>Number of nouns</th>
<th>Number of verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>9</td>
<td>33%</td>
<td>11%</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>A2</td>
<td>9</td>
<td>67%</td>
<td>44%</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>A3</td>
<td>3</td>
<td>100%</td>
<td>100%</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>A4</td>
<td>9</td>
<td>60%</td>
<td>20%</td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>Controls</td>
<td>12</td>
<td>95%</td>
<td>100%</td>
<td>12</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 4. The “cookie theft” picture (analysis 1)

On a careful investigation of the production of the four MA agrammatic subjects on picture description, four conclusions can be made: 1) There is a difference between the number of utterances produced, and the number of utterances produced as sentences; 2) There is a difference between the percentage of utterances with a sentence level status and the percentage of grammatical sentences; 3) There is dissociation between the production of nouns and the production of verbs, 4) There is disassociation between tense production and agreement production. Examples of tense violation include tense substitution as example (5) and (6) illustrate respectively.
(5) Aphasic production
\[ \text{ṣib l-ḥolwa fūq} \]
bring the cookie up
‘He is taking the cookie from upstairs’

Correct production
\[ \text{ṣib l-ḥolwa mōn l-mariju} \]
bring the cookie from the cupboard
‘He is taking the cookie out of the cupboard’

(6) Aphasic production
\[ l-ma tzolla? \]
‘The water poured’

Correct production
\[ l-ma kā-jatzolla? \]
‘The water is pouring’

In example (5) the subject “A4” dropped the aspectual marker /ka-/ along with the person marker /j/. Deletion of the aspectual and the agreement markers resulted in a change from the progressive to the imperative mood. The example also shows that “A4” was unable to produce the preposition [mōn] (meaning [from]) required before the preposition [fūq].

When describing the “cookie theft” picture, “A2” used the past instead of the present progressive as example (6) shows. Agreement errors are fewer compared to tense errors. Below is an instance of subject–verb agreement violation.

(7) * \[ lwōld tāhōt \]
‘the boy- masc. fell-she’

In (7) “A4” used the past tense to express immediate future. The resultant structure [tāhōt] is still a real word in the language. The example also shows that there is an agreement mismatch between [lwōld] (masculine) and [tāhōt] (feminine), hence the ungrammaticality of (7).

1 Prepositions can also be impaired in Moroccan Arabic agrammatism. The subject “A4” misused the lexical item, which should be [kajāxād], meaning [he is taking].
A second level of analysis involved the production of tense and agreement in picture description. Results of the correct use of tense and agreement are given in table 5.

<table>
<thead>
<tr>
<th>Agrammatic subjects</th>
<th>percentage of correct tense</th>
<th>percentage of correct agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>33%</td>
<td>67%</td>
</tr>
<tr>
<td>A2</td>
<td>33%</td>
<td>67%</td>
</tr>
<tr>
<td>A3</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>A4</td>
<td>33%</td>
<td>100%</td>
</tr>
<tr>
<td>Controls</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 5. Tense and agreement in picture description (analysis 2)

A look at table 4 shows there is dissociation between tense production and agreement production. For example, “A1,” “A2,” and “A4” produced just 33% of verbs, correctly inflected for tense. “A3, however, had both correct tense and correct agreement. The other subjects made exclusive tense errors, or “mixed” errors involving both tense and agreement. Exclusive agreement errors were very few. This finding has been reiterated by various researchers in Menn (1990), Jarema (1998) and Friedmann (2006).

Friedmann and Grodzinsky’s (1997) patient made more tense errors (42.4%) than agreement errors (3.9%). Friedmann (2000) tested a large group of Hebrew and Arabic speaking subject and found that agreement was relatively normal; tense, however, was severely impaired. Gavarro (2002) provides examples from Hebrew, Spanish, and Russian to show that in agrammatic production, there are agreement violations, but compared to tense errors, they constitute a relatively small number.

3.2 Repetition

As in the previous task, the performance of “A1” is worse; he repeated 20 structures out of 67. The performance of “A4” and “A3” was relatively
better; they repeated a total number of 49 structures. “A2” produced 50 items out 67. Compared to their control counterparts, the performance of the four MA-speaking agrammatic subjects is significantly worse.

A second analysis of the repetition task involved the patients' ability to inflect verbs, adjectives, and nouns. The data are found in table 6.

<table>
<thead>
<tr>
<th>Repetition</th>
<th>Percentage of correct verb tense and agreement</th>
<th>Percentage of correct adjectives</th>
<th>Percentage of correct nouns</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>33%</td>
<td>67%</td>
<td>100%</td>
</tr>
<tr>
<td>A2</td>
<td>36%</td>
<td>64%</td>
<td>100%</td>
</tr>
<tr>
<td>A3</td>
<td>36%</td>
<td>64%</td>
<td>100%</td>
</tr>
<tr>
<td>A4</td>
<td>33%</td>
<td>67%</td>
<td>100%</td>
</tr>
<tr>
<td>Controls</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 6. Repetition (analysis 2)

On a careful examination of table 6, we can draw the following conclusions. There is disassociation between tense and agreement. The four MA-speaking agrammatic subjects achieved high correctness scores for agreement, while tense was severely impaired. The ability of the four MA agrammatics to inflect adjectives for gender is entirely intact (100%). Noun repetition showed a slight difference between person and gender. While all of the four MA agrammatics repeated all nouns in the singular and the plural and in the masculine forms, they failed to inflect some nouns for the feminine. This is the case of “A1,” and “A2” who both got a rate of 90%.

A third analysis involved the percentage of verb omissions and verb substitutions. The results are given in table 7.
As reported in Grodzinsky (1990), Friedmann and Grodzinsky (1997), Friedmann (2000) and Grodzinsky (2000), tense substitution rather than tense omission is a characteristic feature of agrammatic production in richly inflected languages (-Zero-morphology). The findings of the current investigation point in the same direction. Tense errors were mostly substitutions of inflection. The percentage of tense omission was very low, compared to tense substitution. For example, both “A4” and “A3” omitted tense inflections with a rate of 17% and 12%, respectively. However, the percentage of tense errors involving substitutions was 83% and 88%, respectively. The percentage of tense markers omissions reached 36% in the case of “A1”. Substitution rate, however, was 64%.

### 3.3 Sentence completion tasks

The results of the sentence completion tasks are given in table 8. They show that the four MA-speaking agrammatic subjects had problems supplying the missing verb. While sentence completion task 1 involved choosing an answer out of two, sentence completion task 2 involved copying the form of the conjugated verb in the first part of the compound sentence. Except for “A1,” whose performance was different in both tasks, there was no significant difference in performance between task 1 and task 2 in the case of “A2,” “A3,” and “A4.”

<table>
<thead>
<tr>
<th>Agrammatic subjects</th>
<th>verb omission</th>
<th>verb substitution</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>36%</td>
<td>64%</td>
</tr>
<tr>
<td>A2</td>
<td>32%</td>
<td>68%</td>
</tr>
<tr>
<td>A3</td>
<td>12%</td>
<td>88%</td>
</tr>
<tr>
<td>A4</td>
<td>17%</td>
<td>83%</td>
</tr>
<tr>
<td>Controls</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Table 7. Repetition (verb omission and substitution: analysis 3)
A second analysis examined the ability of the four agrammatic subjects to correctly inflect verbs for tense and agreement. The analysis shows that patients produced more tense errors than agreement errors both in sentence completion tasks 1 and 2. While “A2” and “A3” produced tense errors (100%) almost exclusively, they did not make any agreement errors in sentence completion task 1. In sentence completion task 2, they made fewer agreement errors (25%), but more tense errors (75%). “A1” and “A4” scored differently in both tasks, though the dissociation between tense errors and agreement errors is still maintained. In A4’s case, the percentage of tense errors is 80% in task 1 and 60% in task 2. “A1” produced a rate of 66% in task 1 and 72% in task 2. Agreement errors, however, were relatively few. The results of these data can be found in table 9.
Table 9. Sentence completion tasks 1 and 2 (tense and agreement)

<table>
<thead>
<tr>
<th>Agrammatic subjects</th>
<th>Sentence completion: task 1</th>
<th>Sentence completion: task 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage of tense errors</td>
<td>Percentage of agreement errors</td>
</tr>
<tr>
<td>A1</td>
<td>66%</td>
<td>34%</td>
</tr>
<tr>
<td>A2</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>A3</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>A4</td>
<td>80%</td>
<td>20%</td>
</tr>
<tr>
<td>Controls</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Table 9. Sentence completion tasks 1 and 2 (tense and agreement)

3.4 Grammaticality judgment tasks

The results of the grammaticality judgment tasks can be found in table 10.

Table 10. Grammaticality judgment (free judgment and contrastive judgment)

<table>
<thead>
<tr>
<th>Agrammatic subjects</th>
<th>Number</th>
<th>Free judgment</th>
<th>Number</th>
<th>Contrastive judgment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1</td>
<td>10</td>
<td>(8/10)</td>
<td>10</td>
<td>(7/10)</td>
</tr>
<tr>
<td>A2</td>
<td>10</td>
<td>(9/10)</td>
<td>10</td>
<td>(10/10)</td>
</tr>
<tr>
<td>A3</td>
<td>10</td>
<td>(9/10)</td>
<td>10</td>
<td>(7/10)</td>
</tr>
<tr>
<td>A4</td>
<td>10</td>
<td>(8/10)</td>
<td>10</td>
<td>(7/10)</td>
</tr>
<tr>
<td>Controls</td>
<td>10</td>
<td>(10/10)</td>
<td>10</td>
<td>(10/10)</td>
</tr>
</tbody>
</table>

We can deduce the following noteworthy remarks from table 10:

1) Comprehension of tense and agreement is better compared to production. Still, individual variation in grammatical sensitivity is
exhibited, since both “A2” and “A3” performed better (90%) than “A1” and “A4” (80%) in free judgment. “A2” showed a high degree of grammatical sensitivity in contrastive judgment (100%). However, “A1,” “A3” and A4’s performance was lower (70%) in contrastive judgment than their performance in free judgment.

2) All the four agrammatic subjects exhibited increased sensitivity to ungrammatical sentences compared to their performance in picture description. Linerbarger, Schwartz and Saffran (1983) argue that agrammatic subjects perform better when judging the grammatical well-formedness of sentences although they seem to experience difficulties at the level of production and comprehension. That is, they are able to detect ungrammatical sentences.

4. Discussion

4.1 Summary

The results of the present study reveal characteristic features prototypical of agrammatism as outlined in Menn and Older (1990), Grodzinsky (1990), Mimouni and Jarema (1997), Jarema (1998) and Kolk (1998). The four MA agrammatic subjects had agrammatic output, defined by short utterances, a slow rate of speech, and reduced “syntactic grammatical forms,” with almost no embedded structures. They also experienced verb retrieval problems, referred to as “Averbia” (Zingeser & Berndt 1990). Verbal morphology is also impaired. The four MA-speaking agrammatic subjects omitted and/or substituted grammatical forms relating to tense, aspect, agreement, and negation. The results of the experimental tasks show that the four MA-speaking agrammatic subjects performed worse on tense than on agreement. In fact, in oral production, patients were good at producing subject-verb agreement. However, it must be stressed that not all verbal affixes are equally impaired. Most of the errors involve omission and substitution of verbal affixes. The four MA-speaking agrammatic subjects substituted rather than omitted inflections; omission of tense markers would result in non-inflected stems. These are considered to be non-words and as such they cannot be pronounced. Furthermore, when the subjects
make recourse to substitution, they still keep the “inflectional paradigm” (Mimouni and Jarema 1997; Jarema 1998). Witness the following example:

(8) Aphasic production
\[ x\text{ər} \text{ʒ}-\text{ət} \]
leave-past-3\textsuperscript{rd}. p. sg. fem.
‘She left’

Target
\[ x\text{ər} \text{ʒ}-\emptyset \]
leave-past-3\textsuperscript{rd}. p. sg. masc.
‘He left’

In the above examples, the unmarked masculine morpheme /-ø/ was substituted by the feminine marker /ət/, thus resulting in gender substitution. Both [xərʒ] and [xərʒ-ət] are real words in MA. This is consistent with the findings reported in Mimouni and Jarema (1997), and Jarema (1998). They found out that their three Algerian Arabic-speaking agrammatic subjects substituted verbal affixes and never produced non-words. Nevertheless, they argue that “omissions never lead to the production of non-words” (Mimouni & Jarema 1997: 134).

The account advanced by Friedmann and Grodzinsky (1997) can account for the tense/agreement dissociation attested in MA-speaking agrammatic subjects. In fact, it explains the pattern of verbal breakdowns observed in diverse languages (i.e., German, Hebrew and Dutch). Friedmann & Grodzinsky maintain that tense can be selectively impaired, while agreement cannot. For example, Benedet et al. (1998) state that their six Spanish-speaking subjects were better at producing subject–verb agreement (63.8%) but worse at producing verbal tense (5.5%). Friedmann (2000), in turn, argues that her two Palestinian Arabic speakers made more tense errors (69%) than agreement errors (9%) in repetition and grammaticality judgment.

Overall, the cross-linguistic data discussed above confirm the claim that the four MA agrammatic subjects substituted inflectional markers and that they seemed to be able to produce better subject-verb agreement, but are poor in inflecting for tense. In addition, when the verb was inflected for tense and agreement, they avoided its use. In other words, when the verb
involved complex syntactic processing, MA agrammatics simply dropped it. This explains why their utterances were characterized by “non-fluency” and reduced syntactic complexity, i.e., “telegraphic style.”

4.2 Tense/agreement: a linguistic account

Friedmann and Grodzinsky’s syntactic account of agrammatic production (1997) claim is that agrammatic production is caused by a deficit of functional categories which dominate grammatical morphology. Both the tense node and the agreement node have a position in the “phrase structure hierarchy.” For example, Agr-nodes are located lower than C-nodes. The claim of the structural account is that grammatical morphemes dependent on lower nodes are spared; those dependent on higher nodes are disrupted. This explains the existence of the within-category variation. In this respect, Friedmann and Grodzinsky (1997), Friedmann (2000) and Grodzinsky (2000) reported the case of Hebrew and Arabic-speaking subjects who made a lot of tense errors (42.4%) but very few agreement errors (3.9%). This finding has pushed them to posit a pruned-tree structure, according to which their patients fail to project the tense node. This explains why the functional category Agr is intact: it is located lower than the tense node. Since the deficit lies in the tense node, no other nodes or functional projections (i.e., comp) can project. Kolk (1998: 257) contends that “if a patient has an impairment with respect to a particular node, higher levels are also affected because, in the process of verb movement, the verb can not cross over the impaired node.”

Another consequence of the syntactic account is that agrammatics omit verbs because they cannot move them to the relevant tense node to correctly inflect them. Arguably, this could be due to simple lexical retrieval deficit, and not due to deficits in inflecting the verb. In short, according to Friedmann (2000) and Grodzinsky (2000), Hebrew and Arabic agreement markers are located lower in the tree than tense and this explains why they are spared. Friedmann and Grodzinsky’s syntactic account is interesting, but it cannot explain MA agrammatic production for the following reasons: firstly, Friedmann and Grodzinsky’s account (Friedmann & Grodzinsky 1997; Friedmann 2001; Grodzinsky 2000) postulates that the order of functional categories in the extended projection of the Arabic verb is as follows:
Most studies in Moroccan Arabic syntax, however, argue that the order of functional categories is AgrpP>TP>VP (Akkal 1993; Akkal & Gonegai 2002). Akkal (1993) maintains that both the VSO and SVO orders derive from the same underlying structure. The AgrP takes the TP as a complement, i.e., TP is internal to AgrP. V-movement and NP-movement are motivated by morphological considerations, i.e., to have features checked. The features of NPs include case and phi-features (person and number). The inflectional elements T and Agr heads have two sets of features: V-features and N-features. These features check properties of the verb that adjoins to them. They also check properties of the NP that raises to their specifier position. The VSO order is derived by a single head movement, overt V-movement to T because the V-features of T are strong. The V-features of Agr are weak, and the verb can not move to this position until LF. In contrast, the SVO order is derived when the V-features of Agr and the N-features of T are strong, making it possible for the verb to move to further to AgrP, and the NP to move to its specifier position.

Secondly, within the hierarchy projection, there exists a within-category variation. The evidence comes from the aspectual marker /ka-/, which is impaired in MA agrammatism as shown by the picture description task. The four MA-speaking agrammatic subjects failed to produce the aspectual marker /ka-/, required for ongoing activities. The negative marker /ma-ja/, however, is spared. If the analysis of Akkal (1993) and Benmamoun (2000) is correct, then the aspectual functional category should be located just above the VP, the negative marker is the next projection. So, the order of the functional categories in MA should be as follows:

(10) AgrP > TP > NegP > AspP > VP

In the VSO order, the verb checks first the aspectual marker, the negative marker, tense and finally ends up in agreement. If the four MA-speaking agrammatics experienced problems at the level of the tense node then, one would wonder how the verb ends up having agreement affixes. The latter are located higher, and given the deficient lower tense node, they are not
expected to project. In short, the Tree-Pruning Hypothesis fails to account for the tense/agreement dissociation in MA.

Thirdly, in Chomsky (2000) it is argued that tense is an interpretable feature; agreement, however, is a process through which the “uninterpretable features of person/number of T are valued against the interpretable person/number features of the subject.” Therefore subject-verb agreement presupposes that T hosts the features for agreement, making the latter redundant. Put differently, agreement is omitted because it has no interpretable features that can converge at the PF or LF levels, i.e., it has no role in feature checking since it does not host case or person/number features.

According to Chomsky (1998, 2000) the features of the probe and the goal have to match, the goal has to be c-commanded by the probe, and there should be no intervening elements if feature attraction is to take place. A goal moves when its “unvalued” features are not checked by Agree. For example, the tense node has two uninterpretable features, phi-features (case, agreement) and the External Projection Principle (EPP) features. The specifier of the functional category of T is the landing site for the subject. That T has a specifier is a consequence of the EPP which requires that all sentences must have a subject. Once the uninterpretable case feature of the subject has been checked, the subject can remain in situ.

Viewed in this way, the deletion of features is a consequence of the “valuation” of features that entered the derivation “unvalued.” Put differently, the valuation of a feature which entered the derivation without a value plays the role of marking the feature for deletion, which takes place at the end of the derivation. Agree serves to establish a connection between a head and a lexical item; the features of the head and those of the lexical item enter into the Agr relation, but no overt movement of the lexical items takes place.

The fact that agreement is largely preserved in MA agrammatism indicates that T/INF is generated in agrammatism. If this is the case, then how can the TPH explain the tense deficit? Put differently, the whole argument of the TPH should be abandoned since agreement has no longer a category of its own in recent syntactic theory. In addition, Wenzlaff and Clahsen (2004) argue that syntacticians working in the same framework have since posited the reversed order of AgrP and TP. This is the case of Moroccan Arabic and German.
Nevertheless, the TPH requires that the tense node is higher than the agreement node, and that the tense node is pruned. Therefore, all functional categories above it should be lacking. In MA and German to name just two, the TPH predicts that agrammatism affects both tense and agreement. The results of Wenzlaff and Clahsen's study and the present study argue against the predictions of the TPH.

### 4.3 Tense and agreement: a processing account

Results from the present study are consistent with previous findings on agrammatic production in diverse languages (Friedmaan 2006) and thus, provide further support for the cross-linguistic validity of a tense-agreement dissociation in agrammatic aphasia. In Moroccan Arabic Agr is located higher than TnsP, so the Tree-Pruning Hypothesis would predict Agr to be more impaired than Tense. This prediction is not borne out as tense was more impaired than Agr.

Therefore, agrammatism in Moroccan Arabic cannot be described in terms of a structural account but rather by difficulties in the implementation of grammatical knowledge. The linguistic problems attested in the performance of the patients is the result of impaired ability to access and exploit grammatical knowledge. Results indicate that agrammatic speakers are able to behave according to the task demands and, thus, to produce more complete sentences than those produced in free conversations. Interestingly, incorrect agrammatic performance in free conversations is analyzed as the effect of computational load. It requires integration of information at the grammatical and conceptual levels. Production of agreement inflection only requires activation at the grammatical level. Integration of information at the grammatical and discourse level of representation leads to overload of the computational capacities of agrammatic individuals. The effects of processing load are explained by assuming that less working memory capacity is available for the computation of verb inflection. MA agrammatics suffered limitations in processing capacities that affect their ability to "synchronize" morphological and syntactic information. This resulted in "resynchronization of the phrase structure," and dropping inflectional and/or lexical elements such as verbs resulted in "pruning." For example, it was easier for the four MA-speaking agrammatic subjects to process plural
nouns than verbs. Verbal inflections are hard to process because they carry more inflectional weight, determine the number of arguments, require a TensePhrase projection, and move higher in tree to check features against inflectional morphemes; nouns, on the other hand, are easy to process because they carry less inflectional weight, fill out arguments (NPs), require a Determiner P projection (NP), and undergo one movement to get its features valued. Thus, agrammatics show a “slow activation” / a processing “delay” when they are asked to produce verbs which are syntactically and morphologically complex in Moroccan Arabic. Resource demands for complex structures exceed the limit. So, storage and computational processes compete with each other for the remaining limited resources, resulting in production deficits. Lexical elements are already decaying and are suffering from response competition with other lexical items. If a morpheme is selected at this stage, there is a high chance that it will be an erroneous one (Kolk 1998). Put differently, agrammatic speech is the result of the effect of computational load. Agrammatics use utterances requiring a reduced processing capacity in spontaneous speech, but selection of complete sentence types characterized by paragrammatic output.

To avoid structures that require a “computational load” or a complex syntactic processing, the four MA-speaking agrammatic subjects used simplified structures. This explains the high rate of verb omissions in free tasks such as picture description. Two key notions characterize agrammatic production: “low activation” and “fast decay of phrase information” (Kolk 1998: 258). The latter processes result in “resynchronization of the phrase structure” (Kolk 1998: 258). To process verbal inflections successfully, the agrammatic subjects need first to produce correct verbal inflections and then merge them with the lexical category. So, it seems that agrammatic production does affect the patients’ choice of lexical elements, which enter into competition when merging is delayed.

If slot delivery is delayed, the lexical element is already decaying and is suffering from response competition with other lexical items. If a morpheme is selected at this stage, there is a high chance that it will be an erroneous one. (Kolk 1998: 258)

In sum, the four MA-speaking agrammatic subjects suffer from a processing deficit that does not affect their grammatical knowledge of verbal elements. That this is the case is shown by the results of the
grammaticality judgment tasks. All the four MA-speaking agrammatic subjects were sensitive to the well-formedness of sentences with tense and agreement markers. This means they had no problem judging the grammaticality of elements they found difficult to produce. Furthermore, the results of grammaticality judgment allowed us to deduce that the tense/agreement dissociation is a production-specific phenomenon. Deficient tense does not implicate comprehension and grammaticality judgment. There is cross-linguistic support for lack of parallelism. Goodglass et al. (1993), Friedmann and Grodzinsky (1997) and Stavrakaki and Kouvava (2006) all argue that grammaticality judgment and comprehension of verbal morphology are unimpaired, indicating that the dissociation between tense and agreement does not hold across modalities other than production.

A further advantage of the processing account is its ability to handle variation within the closed class items and for the effect of task variation. For example, in spontaneous speech production, agrammatic patients omitted verbs; in picture description, however, the number of omissions went down, that of substitution went up (see also Stavrakaki and Kouvava 2003; Kofstede & Kolk 1994; Kolk 1998). Kolk and his colleagues (1985, 1990, 1992) found out that their German and Dutch agrammatic data were characterized by omission of grammatical morphemes in free conversation. In picture description, however, substitution of grammatical morphemes characterized the deficit. Crucially, the results obtained by the picture-description task indicate that agrammatic speakers are able to behave according to the task demands and, thus, to produce more complete sentences than those produced in free conversations (Stavrakaki & Kouvava 2003: 138). In other words, “an economy hypothesis” or “adaptation theory” explains the task variation observed in agrammatic speech. The four MA-speaking agrammatics avoided using complex structures that require “convergence” (i.e. computing) and omitted or/and substituted verbal affixes; their speech was telegraphic, defined by ellipsis. However, in picture description tasks and in recitation, they adapted to a certain extent and ellipsis was less conspicuous.
5. Concluding remarks

Friedmann and Grodzinsky’s linguistic model (1997) is interesting because it holds the view that tense is deficient while agreement is spared. Nevertheless, their model fails to provide evidence relating to the order of functional categories in MA. Friedmann and Grodzinsky (1997) claim that their syntactic tree is pruned at the level of tense; this is so because in their account the tense node is higher up in the tree than the agreement node. Following Akkal (1993), Akkal and Gonegain (2000) and Benmamoun (2000), I argue that the ordering of functional categories in Moroccan Arabic is AgrP>tenseP. If agreement is above tense, then how can one explain deficient tense, but spared agreement? Adding to that, their linguistic model argues that agrammatic aphasia affects the patients’ grammatical knowledge: the agrammatic subjects lose all of their syntactic ability. Such an idea runs contrary to common belief; the four MA-speaking agrammatic subjects still retain their ability to judge the well-formedness of sentences though their production is much affected.

The claim being made in the present paper is that production results from limitations in processing capacities. These are affected by “slow activation” of lexical items and “decay of rate.” In the processing account, grammatical knowledge is not disrupted; agrammatism is viewed as a “computational” rather than a “conceptual” deficit. The four MA-speaking agrammatic subjects had difficulty accessing syntactic knowledge. The fact that syntactic knowledge is not accessed pushes them to recourse to adaptation as a strategy. As a result of adaptation, they drop items that are difficult to process. In brief, the four MA-speaking agrammatic subjects suffer from a processing disorder that affects their ability to “synchronize” morphological and syntactic information, a fact which is apparent in the failure to produce complex syntactic structures. This explains the use of simplified grammatical structures by the four MA-speaking agrammatic subjects.
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From Phylogenetic Diversity to Structural Homogeneity: On Right-branching Constituent Order in Mesoamerica

Abstract

In this article it is claimed that language contact has led to structural homogeneity in the languages of Mesoamerica. Mesoamerican languages are demonstrated to be structurally homogeneous insofar as they tend to be consistently right-branching. This tendency can naturally be explained in terms of Hawkins’ (1994, 2004) theory of Early Immediate Constituents (EIC), which predicts that uniform branching facilitates online processing. Adopting an evolutionary model of language change proposed by Kirby (1999), it is argued that Mesoamerican languages have become structurally homogeneous as a result of the adaptive interplay between the generation of structural variation on the one hand, and the process of selection from among existing variants on the other: Language contact acts as a source and amplifier of variation and therefore feeds the evolutionary mechanisms of change. It offers speakers a choice and allows for the selection of those structures which optimize Early Immediate Constituent recognition best.

1. Introduction: The Mesoamerican linguistic area

1.1 The boundaries of Mesoamerica

The term ‘Mesoamerica’ was coined by the anthropologist Paul Kirchhoff (cf. Kirchhoff 1943). It refers to an area that covers large parts of Mexico,
Guatemala and El Salvador, and extends southwards on to the Pacific coast of Costa Rica (cf. Figure 1). Kirchhoff (1943) characterizes Mesoamerica as a *kulturbund* which manifests itself in a number of features from different areas of cultural life (agriculture, religion, garment, architecture, etc.). The cultural convergence that can be observed is undoubtedly the result of long-term coexistence. With the exception of the Uto-Aztecan groups that migrated into Mesoamerica around 1000 AD, Mesoamerican peoples have co-existed for several millennia (cf. Coe et al. 1986 as well as references cited there). Migration in the area has, for the most part, been either internal or inwards. To a certain extent, this can probably be attributed to the fertile soils and rich fresh water resources that are characteristic of the region (cf. West 1964). The northern border of Mesoamerica corresponds approximately to the dividing line between the dry lands in northern Mexico and the more fertile soils in the centre and the south. The south-eastern border does not have any topographical significance.

![Figure 1. Mesoamerica as a kulturbund (Kirchhoff 1943)](image)

It is by now generally accepted that Mesoamerica is “a particularly strong linguistic area” (Campbell et al. 1986: 530; cf. also Stolz & Stolz 2001). It should be noted, however, that the boundaries of Mesoamerica as a linguistic area do not coincide entirely with its boundaries as a *kulturbund* according to Kirchhoff (1943). On the basis of linguistic evidence, Campbell et al. (1986) argue that Mesoamerica is bounded in the north by a dividing line that corresponds approximately to the tropic of cancer (cf. the thin straight line in Figure 1). Some of the languages spoken in north-west Mexico are thus excluded (in particular, Cora, Huichol, Southern Tepehuan...
and Northern Tepehuan; note that these languages were included in some previous work on the Mesoamerican *sprachbund*, e.g. by Kaufman 1973). By and large, anthropological and linguistic evidence nevertheless converge, bearing witness to the fact that Mesoamerican peoples have co-existed and been in contact with each other for several millenia.

The identification of boundaries for the Mesoamerican linguistic area has been approached in terms of a quantitative model by van der Auwera (1998). Van der Auwera assumes that linguistic areas generally have fuzzy boundaries, and that membership is a matter of degree. The degree of membership depends on the number of areal traits that a given language exhibits. Consequently, some of the peripheral Mesoamerican languages—for instance, Cora—are considered only “partly Mesoamerican” (van der Auwera 1998: 266). This means that they exhibit a few but not all of the traits that characterize the Mesoamerican *sprachbund*. As will be seen, the present approach is quantitative, very much like van der Auwera’s, and therefore does not rely on the assumption of categorical membership or non-membership of any given language to the Mesoamerican *sprachbund*. In tables and surveys, the languages of the ‘north-western peripheral area’ (Cora, Huichol, Northern Tepehuan, Southern Tepehuan) will be regarded as non-Mesoamerican, i.e. I adopt the boundaries assumed by Campbell et al. (1986). It should be borne in mind, however, that these languages clearly have an intermediate status. In maps, the north-western peripheral area will be separated from both the (genuine) Mesoamerican languages in central Mexico and the (clearly) non-Mesoamerican languages in the north. A map of the Mesoamerican languages mentioned in this article is provided in Figure 6 in the Appendix.

### 1.2 Linguistic features of Mesoamerica

Mesoamerica has been characterized in terms of the following areal traits (cf. Campbell et al. 1986; Campbell 1997; van der Auwera 1998; Stolz & Stolz 2001):^3^

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^2^ More recently, Avelino (2006) has argued that Pamean languages—Northern Pame, Central Pame and Southern Pame (or ‘Jiliapan Pame’), which are often regarded as varieties of the same language, i.e. Pame—exhibit Mesoamerican traits to varying degrees (in particular, in their numeral systems). He assumes that the boundary between Mesoamerican and non-Mesoamerican languages cuts across these languages or varieties.

^3^ A list of glosses is given in the appendix.
(1) a. VO word order;
b. possessive constructions of the type [POSS-NPSR NP_PSM], e.g. Tzotzil
[s-tot [li Šun-e]] ‘Šun’s father’ (lit. ‘his-father the Šun-CL’);
c. relational nouns which precede their complement and which are typically
associated with the semantics of spatial relations, e.g. Classical Nahuatl
i-nawak i-kal ‘close to his house’ (lit. ‘its-closeness his-house’);
d. (certain features characteristic of) vigesimal numeral systems;
e. loan words from Nahuatl (e.g. Totonac kuluutl < Nahuatl kolootl ‘turkey’) and
semantic calques (e.g. ‘stone’ for ‘egg,’ cf. Nahuatl tetl ‘stone, egg’ and Tzotzil
ton kašlan, lit. ‘stone hen,’ i.e. ‘egg’).

None of these traits is exhibited by all Mesoamerican languages. Still, they
represent a sample of features that are extremely widespread in, and
congenial of, the region. In all cases, it can be demonstrated (via
comparative evidence) that the features have spread through language
contact. Most of the traits are logically independent. However, VO word
order, preposed relational nouns (which are akin to prepositions) and the
genitive construction illustrated in (1b) are closely related both
conceptually (the head or non-branching node precedes the complement or
branching node) and empirically (they tend to co-occur in the languages of
the world, as has been shown in word order typology in the tradition of
Greenberg 1966). These three features can be considered symptoms of two
salient typological properties of Mesoamerican languages: Mesoamerican
languages tend to be HEAD-MARKING and RIGHT-BRANCHING. The latter of
these features will be central to the argument made in this paper.

1.3 Structural homogeneity and phylogenetic diversity

It will be demonstrated that Mesoamerican languages are structurally
highly homogeneous, in the sense that the order of branching and non-
branching nodes in surface syntax is invariant across phrasal constituents.
More specifically, Mesoamerican languages are rather consistently right-
branching, i.e. smaller constituents tend to precede larger ones. This high
degree of ‘structural homogeneity’ is surprising if one considers that (a)

4 In terms of Nichols (1986), relational nouns of this type can be called ‘head-marking
prepositions’.

5 I use the term ‘structural homogeneity’ as referring to the extent to which the order of
branching and non-branching nodes is invariant across different types of categories.
There are two extremes of structurally homogeneous languages, i.e. consistently right-
branching languages and consistently left-branching languages.
the Mesoamerican linguistic area exhibits a high degree of “phylogenetic diversity” (Nettle 1999), and (b) two of the four major families represented in the area (Uto-Aztecan and Mixe-Zoquean) were formerly basically left-branching. Instead of developing a mixed-type syntax—as one might be led to expect on the basis of the naive assumption that mixing languages leads to structural disorder—Mesoamerican languages seem to have ‘opted for’ right-branching constituent structure and uniform surface syntax. This fact is in need of an explanation since it is not a priori expected that phylogenetic diversity and inter-family language contact should lead to structural homogeneity. I will argue that the development of a homogeneous constituent structure in Mesoamerican languages is predicted by Hawkins’ (1994) theory of ‘Early Immediate Constituents,’ embedded into a Neo-Darwinian model of language change as developed by Croft (1996, 2000) and Kirby (1999), among others: Syntactic diversity in a situation of intensive language contact gives rise to structural homogeneity because the existence of structural variation feeds the evolutionary process based on the interplay between variation and selection. On the assumption that structural homogeneity facilitates language processing, this process can be regarded as adaptive, responding to the cognitive needs of speakers taking part in a situation of intensive language contact.

The paper starts with an explication of the notion ‘branching direction’ in Section 2. An indicator of the ‘branching tendency’ of a language (right-branching or left-branching) is defined: the ‘branching index’. In Section 3, branching indices are determined for 40 Mesoamerican and 15 (adjacent) non-Mesoamerican languages. The results are interpreted in terms of their areal distribution and checked against genetic relationships. It is shown that Mesoamerican languages are structurally highly homogeneous (heavily right-branching), and that this homogeneity cannot be attributed to genetic relatedness. Section 4 offers an explanation for the observed homogeneity in terms of processing ease, referring to Hawkins’ (1994, 2004) theory of Early Immediate Constituents and Kirby’s (1999) elaboration of it in terms of an evolutionary model. Section 5 summarizes the conclusions.
2. Homogeneous constituent order in Mesoamerica

2.1 On the notion of ‘branching direction’

One of the central claims made in this paper is that Mesoamerican languages are ‘structurally homogeneous’. More specifically, they are claimed to be ‘predominantly right-branching’. This claim calls for clarification in two respects: first, it should be made explicit what exactly ‘right-branching’ means; and second, the qualifying adverb ‘predominantly’ should be translated into a more precise notion. These issues will be addressed in this section.

I will adopt the concept of branching direction that is commonly used in word order typology (e.g. Dryer 1992; Hawkins 1983, 1994; Kirby 1999). In this research tradition, branching direction refers to the order of shorter (lexical, non-branching) elements and larger (phrasal, branching) sister constituents in a surface constituent analysis. For example, the order VO is a right-branching structure because the verb is (usually) lexical and the object phrasal. The reverse order OV, by contrast, is left-branching since here, the phrasal constituent (NP) precedes the lexical head (V). Thus, branching direction is regarded as a property of the constructions of a given language.6

If we assume that the branching direction of a constituent is a function of the order of phrasal and non-phrasal elements in surface syntax, we obviously have to make some basic assumptions about constituent structure. Constituent structure will be represented using a simple version of X-bar theory in the tradition of Chomsky (1970) and Jackendoff (1977). Pronominal possessors, numerals, and adjectives are assumed to adjoin to N’. Lexical genitives are taken to be sisters of N’ when they are modifiers and sisters of N when they are complements. The hierarchical structure of a (consistently right-branching) NP is thus assumed to be as shown in (2a) (the order of DET, POSS, and NUM may of course vary from one language to another). German examples are given in (2b) and (2c).

---

6 Note that Dryer’s (1992) ‘branching-direction theory,’ on which Hawkins’ (1994) theory is based, does not say anything about what is the ‘head’ and what is the ‘dependent’ in a phrasal node. I will assume that the non-phrasal node is generally the ‘head,’ but this is basically an abbreviation and does not have any theoretical implications.
Word order typology in the tradition of Greenberg (1966) sometimes fails to distinguish between categorical and relational notions. For example, a statement such as “in language L the verb precedes the object” is, strictly speaking, inaccurate because ‘verb’ is a lexical category and ‘object’ a syntactic relation. More accurately, we should say that ‘in language L, a verbal predicate (regularly) precedes a nominal object.’ Technically, the order of verbal predicate and nominal object could be represented by the formula ‘[V]PRED-[NP]O,’ where category labels are represented by capitals and relational notions by subscripts. For the sake of brevity, however, subscripts indicating syntactic relations will be used only when ambiguity may arise. For example, ‘V-[NP]O’ will stand for the traditional shortcut ‘VO,’ since a verb is typically a predicate, whereas an NP is not always an object. In informal discussion, ‘VO’ will continue to be used as an abbreviation for ‘the verbal predicate precedes the nominal object.’ Likewise, ‘NG’ will stand for ‘the head noun precedes the genitive (NP).’

In order to determine the overall tendency of a language towards either right-branching or left-branching syntax, I will use a sample of six phrasal categories: (i) monotransitive VPs (verb and direct/primary object; e.g. saw [the man]), (ii) Adpositional Phrases (AdP, prepositions [in [two hours]] vs. postpositions [[two hours] ago]), (iii) combinations of a genitive NP and a head noun/N’-constituent ([NP[NP,G]e your father’s] [N son]), (iv) combinations of a pronominal possessor and N’ ([my [old friend]]), (v) combinations of demonstratives and N’ ([this [old man]]), and (vi) combinations of numerals and N’ ([three [young boys]]).

This sample of categories as indicators of the general ‘branching tendency’ of a language is intended to represent phrasal nodes at different levels of the clause, two of them above NP (VP, PP) and four of them within NP (NG, PROPOSS-N’, DEM-N’, NUM-N’). While higher-level constituents have a stronger impact on the overall branching tendency of a language (which will be captured by a ‘heaviness coefficient,’ cf. Section 2.2.2), lower-level constituents tend to be more stable diachronically. Taking into account different levels of clause structure is meant to ensure
that both more recently acquired structural properties of languages (usually at the higher level of syntax) and more conservative traits are reflected (in lower-level syntax). The choice of constituents within NP has been governed by obvious restrictions of data availability: the NP-internal categories chosen in my sample (genitive NPs, pronominal possessors, demonstratives, numerals) are typically represented in either reference grammars or dictionaries of Mesoamerican languages. There is, thus, a certain arbitrariness or at least convenience in the choice of categories contained in the sample. Still, the sample does seem to contain the most frequently occurring phrasal categories, as is also reflected in the very fact that these categories figure prominently in reference grammars, at least of Mesoamerican languages and other languages of Mexico and Central America.7

The constructions dealt with in this paper are summarized in Table 1. The first column assigns an ID to each construction for the sake of future reference. The rightmost columns specify which order of constituents corresponds to which ‘branching type’ (right-branching or left-branching). Prepositions and postpositions are subsumed under ‘Ad(position)’.

<table>
<thead>
<tr>
<th>Cn</th>
<th>order of . . .</th>
<th>right-branching</th>
<th>left-branching</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>verb and object</td>
<td>V – [NP]o</td>
<td>[NP]o – V</td>
</tr>
<tr>
<td>C2</td>
<td>adposition and NP</td>
<td>Ad – [NP]</td>
<td>[NP] – Ad</td>
</tr>
<tr>
<td>C3</td>
<td>head noun and genitive NP</td>
<td>N – [NP]GEN</td>
<td>[NP]GEN – N</td>
</tr>
<tr>
<td>C4</td>
<td>pronominal possessor and N’</td>
<td>PROPOSS – [N’]</td>
<td>[N’] – PROPOSS</td>
</tr>
<tr>
<td>C5</td>
<td>demonstrative and N’</td>
<td>DEM – [N’]</td>
<td>[N’] – DEM</td>
</tr>
<tr>
<td>C6</td>
<td>numeral and N’</td>
<td>NUM – [N’]</td>
<td>[N’] – NUM</td>
</tr>
</tbody>
</table>

Table 1. Order of elements and branching types

7 Note that a more comprehensive investigation would have to be based on natural discourse, rather than abstractions thereof (grammatical descriptions). Such an investigation has been carried out by Hawkins (1994) for English, but is, for obvious reasons, beyond the scope of this paper: We would need a parallel corpus comprising data from 45 languages, which is inconceivable even for much better documented languages than those of Mesoamerica, e.g. European ones. At some point it may be possible to carry out such an investigation on the basis of bible texts.
2.2 The branching index

2.2.1 Towards an operationalization

If branching direction is regarded as a property of constructions or phrasal constituents in surface syntax, it probably becomes apparent what it means for a language to be ‘predominantly right-branching’: it means that the language in question has right-branching constituent structure in most of its phrasal constituents. For example, Mixtec is right-branching in VPs since it is VO; it is right-branching in lexical genitive constructions since it is NG; it is right-branching in PPs since it has prepositions. Mixtec NPs headed by a demonstrative, by contrast, are left-branching since demonstratives follow N’ (for example, [\text{npl}_{-N'} \text{iža sɨʔəʔa} \text{žaʔa}] ‘this goddess,’ lit. ‘[[god\ female] this]’). Thus, in most but not all of its phrasal constituents, Mixtec is right-branching; it is ‘predominantly right-branching’. Otomí, on the other hand, is right-branching in all of the constructions mentioned above. We could say that it is ‘very heavily right-branching’ and ‘more right-branching than Mixtec.’ However, such impressionistic statements are hardly of any use in a cross-linguistic study claiming a certain degree of falsifiability. I will therefore propose a metric that is intended to indicate the branching tendency of a given language: the BRANCHING INDEX, represented as ‘I_b’. I would like to emphasize from the outset that the calculation of a numerical value representing the branching tendency of a language can only be an approximate heuristic device and obviously requires a certain fuzzy tolerance. Within a reasonable extent of tolerance, however, the branching index may be a useful tool which allows us to (quantitatively) compare languages in terms of their branching tendencies.

The branching index is calculated on the basis of the sample of constructions listed in Table 1. The simplest way of calculation would be to work out the ratio of right-branching and left-branching constructions to the total of constructions for each language. For example, we could say that Mixtec is 4/6, or 67%, right-branching and only 2/6, or 33%, left-branching, since four of the six constructions in the sample are right-branching. However, the procedure applied in this paper will be slightly different. First, the structural complexity of the different constructions $C_n$ will be taken into account by assigning a ‘heaviness coefficient’ to them. This is intended to allow for a direct association between the concept of branching direction and Hawkins’ (1994) theory of ‘Early Immediate Constituents’. Second, I will use a mode of calculation that delivers results
between -1 (for maximally left-branching) and +1 (for maximally right-branching). The reason is that I would like to avoid the impression of a fundamental conceptual difference between right-branching and left-branching structure. For example, the statement that Mixtec is 67% right-branching while Otomí is 100% right-branching gives the impression that the two languages are arranged on a scale of ‘right-branchingness’. The claims made below, however, are intended to apply to right-branching and left-branching languages alike. If the branching indices range from -1 to +1, this allows us to abstract away from the degree of either right-branchingness or left-branchingness, and to introduce the more general concept of STRUCTURAL HOMOGENEITY: the ABSOLUTE VALUE of the branching index (i.e., |I_b|) can be regarded as a metric of structural homogeneity, irrespective of the specific branching direction. Consider, for instance, the cases of Otomí and Mískitu. Otomí is right-branching in all six constructions under consideration, while Mískitu is left-branching in all constructions. What both languages have in common is that they are structurally homogeneous. The absolute values of their branching indices are both ‘1’. Figure 2 provides a graphical illustration of the branching indices and their absolute values.

Figure 2. Absolute values of branching indices

The branching index is calculated as follows: let C_n be the right-branching member of any of the six constructions of our sample, and let L_r be a given language. The two-place function U stands for ‘. . . is the canonical construction in . . . ’, and takes construction C_n and language L_r as its arguments. The predication U(C_n,L_r) thus translates as ‘C_n is the canonical construction in L_r.’ The function U has either the value ‘1’ (for true) or ‘0’ (for false). Let us suppose that C_n is the construction C_1 (i.e., V-[NP]_o), and that L_r is Chalcatongo Mixtec. The value of U(C_1,Mixtec) is ‘1,’ since VO
is the canonical order in information-structurally neutral sentences of Mixtec. $U(C_5, \text{Mixtec})$, by contrast, has the value ‘0’ since in Mixtec, demonstratives follow the noun phrase. In this way, the $U$-values are determined for each of the six constructions $C_1$–$C_6$. This is illustrated for Mixtec in Table 2.

<table>
<thead>
<tr>
<th>Construction</th>
<th>$U(C_n, \text{Mixtec})$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$C_1$ V-[NP]$_0$</td>
<td>$U(C_1, \text{Mixtec}) = 1$</td>
</tr>
<tr>
<td>$C_2$ Ad-[NP]</td>
<td>$U(C_2, \text{Mixtec}) = 1$</td>
</tr>
<tr>
<td>$C_3$ N-[NP]$_{\text{GEN}}$</td>
<td>$U(C_3, \text{Mixtec}) = 1$</td>
</tr>
<tr>
<td>$C_4$ PROPSR-[N']</td>
<td>$U(C_4, \text{Mixtec}) = 0$</td>
</tr>
<tr>
<td>$C_5$ DEM-[N']</td>
<td>$U(C_5, \text{Mixtec}) = 0$</td>
</tr>
<tr>
<td>$C_6$ NUM-[N']</td>
<td>$U(C_6, \text{Mixtec}) = 1$</td>
</tr>
</tbody>
</table>

**Table 2.** *U*-values of Mixtec

### 2.2.2 Early Immediate Constituents and the heaviness coefficient

In a next step, the $U$-values are multiplied by a ‘heaviness coefficient.’ The heaviness coefficients are intended to reflect the approximate average length (measured in words) of the phrasal part of a branching node. They are meant to relativize the $U$-values to the impact that the relevant constructions have in terms of processing efficiency. In order to understand their relevance, I will anticipate some of the discussion presented in Section 4. I will follow Hawkins (1994, 2004) in assuming that uniform branching facilitates language production and comprehension, whereas the co-occurrence of right-branching and left-branching constituents gives rise to processing difficulties (and sometimes to garden-path structures). The degree of processing (in)efficiency of a structure crucially depends on the complexity of the constituents involved. Therefore, the (average) length of each constituent needs to be taken into account in the calculation of the branching index.

Let us consider an example: a (right-branching) verb-initial VP that dominates a (left-branching) postpositional phrase is relatively difficult to process, since the most important information about the higher level constituent structure ($VP \rightarrow V + [\text{AdP} \text{ NP Ad}]$) is available only at the end.
of the linear input—the postposition heading the AdP is the last word of the VP. Thus, the (higher-level) constituent tree cannot be constructed by the parser until the whole VP has been processed. Hawkins (2004) refers to the minimal part of a phrase that must be available to the processor in order to construct the immediate constituent structure as the “Phrasal Combination Domain” (PCD): “The PCD for a mother node M and its I(mmediate) C(onstituent)s consists of the smallest string of terminal elements (plus all M-dominated non-terminals over the terminals) on the basis of which the processor can construct M and its ICs” (Hawkins 2004: 107). In a VP such as \([VP \text{ met } [NP \text{ the man}] [AdP [NP two years] ago]]\), the PCD extends over the whole VP (six words). The three immediate constituents V, NP and AdP cannot be processed until the postposition ago becomes available. In the VP \([VP \text{ met } [NP \text{ the man}] [AdP in [NP the library]]]\), by contrast, the immediate constituent structure (under VP) can be constructed as soon as the preposition in has been uttered or parsed. Thus, only four of the six words must be processed in order to recognize the highest nodes that are immediately dominated by VP.

In a first attempt at quantifying the difference in ‘user-friendliness’ or ‘efficiency’ between the two structures, we can calculate the ratio of immediate constituents to the number of words contained in the PCD. Hawkins refers to this ratio as the “IC-to-word ratio” (cf. Hawkins 1994: 69ff., 2004: 106). In the first example given above, the PCD stretches six words, while in the second one it contains only four words. The first example therefore exhibits an IC-to-word ratio of .5 (=3/6, six words must be processed in order to recognize three immediate constituents), while the second has an IC-to-word ratio of .75 (=3/4). The parsing efficiency of a construction is optimal to the extent that its IC-to-word ratio approaches 1.

The details of Hawkins’ theory are much too far-reaching to be discussed here. Some more information and illustration will be provided in Section 4. For the time being, suffice it to say that uniform branching facilitates language processing, and that the length of a constituent is in direct proportion to its impact on the processing (in)efficiency of a structure. When the branching direction of a two-word constituent does not match the overall sentence structure, the IC-to-word ratio of that sentence decreases only slightly. By contrast, when a longer segment – for example, a relative clause – does not match the rest of the sentence, the IC-to-word ratio may decrease dramatically. Translated into the present framework, this means that longer (higher-level) constituents are better indicators of the branching tendency of a language than shorter (lower-level) constituents.
Therefore, the length of the relevant constituents needs to be taken into consideration in the calculation of the branching index, by including a ‘heaviness coefficient’ in the calculus.

How are the heaviness coefficients calculated, then? The six constructions listed in Table 1 can be divided into two groups, according to the structural complexity of their branching constituents: in the first group (C₁–C₃), the branching nodes are NPs, while in the second group (C₄–C₆), they are N’-constituents. Table 3 illustrates this.

<table>
<thead>
<tr>
<th>non-branching node</th>
<th>branching node</th>
</tr>
</thead>
<tbody>
<tr>
<td>C₁ V <em>meet</em></td>
<td>NP a good friend</td>
</tr>
<tr>
<td>C₂ Ad <em>for</em></td>
<td>NP a good friend</td>
</tr>
<tr>
<td>C₃ N <em>son</em></td>
<td>NP GEN a good friend’s</td>
</tr>
<tr>
<td>C₄ PROPSR <em>your</em></td>
<td>N’ good friend</td>
</tr>
<tr>
<td>C₅ DEM <em>this</em></td>
<td>N’ good friend</td>
</tr>
<tr>
<td>C₆ NUM <em>three</em></td>
<td>N’ good friends</td>
</tr>
</tbody>
</table>

Table 3. Structural complexity of branching and non-branching nodes

The branching nodes of C₁–C₃, which are NPs (or even higher-level constituents, e.g. PPs in the case of English prepositional genitives), are structurally more complex than those of C₄–C₆ (which are N’-constituents). Consequently, the branching directions of C₁–C₃ have a stronger impact on the overall architecture of a sentence than those of the (lower-level) constructions C₄–C₆. The heaviness coefficient assigned to each construction is intended to reflect the approximate average length of the phrasal part of the constructions. I will assume that, on an average, N’-constituents consist of two words (A+N, NUM+N, etc.), while NPs contain one word more – namely, the determiner. Therefore, C₁–C₃ are multiplied by the heaviness coefficient ‘3,’ while C₄–C₆ are multiplied by the heaviness coefficient ‘2’.

We are now in a position to determine branching indices. The various U-values, each of them multiplied by the appropriate heaviness coefficient, are added up and then divided by 7.5. From the result of this operation, 1 is
subtracted. This is the mode of calculation that delivers results between -1 and +1. As is illustrated in (3) and (4), the branching index of Mixtec is 0.47:

\[
I_b(L_r) = \frac{3(U(C_1,L_r)+U(C_2,L_r)+U(C_3,L_r))+2(U(C_4,L_r)+U(C_5,L_r)+U(C_6,L_r))}{7.5} - 1
\]

\[
I_b(\text{Mixtec}) = \frac{3(1+1+1) + 2(0+0+1)}{7.5} - 1 = 0.47
\]

Branching indices allow us to compare languages in terms of their branching tendencies. For example, we can now say that the branching index of Otomí – which is ‘1’ – is higher than the branching index of Mixtec (.47). This is a more falsifiable form of saying that ‘Otomí is more right-branching than Mixtec’. Furthermore, the branching indices enable us to make statements about the STRUCTURAL HOMOGENEITY and consequently PROCESSING EFFICIENCY of a language. Assuming that Hawkins’ (1994) theory of Early Immediate Constituents’ is correct, languages are efficient in terms of processing to the extent that the absolute values of their branching indices approach 1. The branching index relates to the IC-to-word ratio insofar as the average IC-to-word ratio in a text of a given language is expected to approximately correlate with the branching index of that language.

3. Structural homogeneity in Mesoamerica

3.1 The data

The sample of languages used for the present investigation comprises members of all families that are represented in Mesoamerica. In addition to the major Uto-Aztecan, Otomanguean, Mayan, and Mixe-Zoquean languages the following smaller families and isolates have been included: Lenca, Totonac-Tepehua, Tarascan, Cuitlatec, Oaxaca Chontal, Xinca, and Huave. As for the Mayan languages, some of them have been subsumed under major stocks (Greater Tzeltalan, Central Branch, K’iche’an, Mamean), since the languages of these stocks are very similar and do not exhibit much variation with regard to word order. Of the neighbouring non-Mesoamerican languages only a smaller sample has been examined, since the main focus of this paper is on the internal structure of Mesoamerica.
Table 4 shows the results. The languages are ordered according to their branching indices. The column ‘MesAm’ indicates whether a language belongs to Mesoamerica or not, according to the boundaries established by Campbell et al. (1986) (cf. Figure 6 in the Appendix). As pointed out above, the languages of the ‘north-western periphery’ are classified as non-Mesoamerican, but the relevant minus sign is put in parentheses because these languages have an intermediate status. Pame—another language (group) whose status as Mesoamerican or non-Mesoamerican is disputed—is here represented by Southern Pame (or ‘Jiliapan Pame’) as described by Manrique Castañeda (1967), which does seem to form part of the Mesoamerican sprachbund.

<table>
<thead>
<tr>
<th>#</th>
<th>Language</th>
<th>Language family</th>
<th>MesAm</th>
<th>$U(C_n, L_r)$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>C1</td>
<td>C2</td>
</tr>
<tr>
<td>1</td>
<td>Nahuatl</td>
<td>Uto-Aztecan</td>
<td>+</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Nahual</td>
<td>Uto-Aztecan</td>
<td>+</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Pipil</td>
<td>Uto-Aztecan</td>
<td>+</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Cora</td>
<td>Uto-Aztecan</td>
<td>(–)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Otomi</td>
<td>Otomanguean</td>
<td>+</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>S. Pame</td>
<td>Otomanguean</td>
<td>+</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Matlazinca</td>
<td>Otomanguean</td>
<td>+</td>
<td>1</td>
</tr>
</tbody>
</table>

8 The data has been drawn from the major reference grammars and dictionaries available. There is a large collection of grammars published by the Mexican branch of the SIL (or ILV, i.e. Instituto Linguistico de Verano; cf. also the ‘SIL-bibliography’ provided in the Ethnologue for each language [http://www.ethnologue.com], and the references given by Campbell 1997). Where available, other grammars have also been consulted. Given that there is hardly any disagreement between the grammars consulted as far as the order of elements dealt with in this paper is concerned, I refrain from indicating the sources for each language individually.

9 Campbell (1997: 344) remarks that “[t]he constituents of this linguistic area [Mesoamerica] are: Aztecan (the Nahua branch of Uto-Aztecan), Mixe-Zoquean, Mayan, Xincan, Otomanguean (except Chichimeco-Jonaz and some varieties of Pame north of the Mesoamerican boundary)...”. Avelino (2006) has shown that Southern and Central Pame exhibit certain Mesoamerican traits (in particular, in their numeral systems) which Northern Pame lacks and thus assumes that “Northern Pame represents the northern limit of Mesoamerica as a linguistic area” (Avelino 2006: 508). Once again, it should be kept in mind that membership to a linguistic area is here regarded as a gradient concept. Cf. also Note 2.
<table>
<thead>
<tr>
<th>Ib</th>
<th>Language($L_v$)</th>
<th>Language family</th>
<th>MesAm</th>
<th>$U(C_m, L_v)$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mazahua</td>
<td>Otomanguean</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Chiapanec</td>
<td>Otomanguean</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Mangue</td>
<td>Otomanguean</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Oluta Popoluca</td>
<td>Mixe-Zoquean</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Sayula Popoluca</td>
<td>Mixe-Zoquean</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Sierra Popoluca</td>
<td>Mixe-Zoquean</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Greater Tzeltalan</td>
<td>Mayan</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Huastec</td>
<td>Mayan</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Itzá</td>
<td>Mayan</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
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<tr>
<td></td>
<td>K’iche’an</td>
<td>Mayan</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Mamean</td>
<td>Mayan</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Mopan</td>
<td>Mayan</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Chortí</td>
<td>Mayan</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Yucatec</td>
<td>Mayan</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Huave</td>
<td>isolate</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Oaxaca Chontal</td>
<td>isolate</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Totonac</td>
<td>Totonac-Tepehua</td>
<td>+</td>
<td>1 1 1 1 1 1 1</td>
</tr>
<tr>
<td>.73</td>
<td>Central Mayan</td>
<td>Mayan</td>
<td>+</td>
<td>1 1 1 1 1 0 1</td>
</tr>
<tr>
<td></td>
<td>Chinantec</td>
<td>Otomanguean</td>
<td>+</td>
<td>1 1 1 0 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Mazatec</td>
<td>Otomanguean</td>
<td>+</td>
<td>1 1 1 0 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Popoloc</td>
<td>Otomanguean</td>
<td>+</td>
<td>1 1 1 0 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Subtiaba</td>
<td>Otomanguean</td>
<td>+</td>
<td>1 1 1 1 0 1 1</td>
</tr>
<tr>
<td></td>
<td>Xinca</td>
<td>isolate</td>
<td>+</td>
<td>1 1 1 0 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Garifuna</td>
<td>Arawak</td>
<td>–</td>
<td>1 1 1 1 0 1 1</td>
</tr>
<tr>
<td></td>
<td>Cuitlatec</td>
<td>isolate</td>
<td>+</td>
<td>1 1 1 0 1 1 1</td>
</tr>
<tr>
<td>.60</td>
<td>Sthn. Tepehuan</td>
<td>Uto-Aztecan</td>
<td>(−)</td>
<td>1 1 0 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Mixe</td>
<td>Mixe-Zoquean</td>
<td>+</td>
<td>1 0 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Chiapas Zoque</td>
<td>Mixe-Zoquean</td>
<td>+</td>
<td>1 0 1 1 1 1 1</td>
</tr>
<tr>
<td></td>
<td>Tarascan</td>
<td>isolate</td>
<td>+</td>
<td>1 1 0 1 1 1 1</td>
</tr>
<tr>
<td>.47</td>
<td>Mixtecan</td>
<td>Otomanguean</td>
<td>+</td>
<td>1 1 1 0 0 1</td>
</tr>
<tr>
<td></td>
<td>Zapotecan</td>
<td>Otomanguean</td>
<td>+</td>
<td>1 1 1 0 0 1</td>
</tr>
</tbody>
</table>
### Table 4. Branching indices of 40 Mesoamerican and 15 non-Mesoamerican languages

<table>
<thead>
<tr>
<th>$Ib$</th>
<th>Language($L_r$)</th>
<th>Language family</th>
<th>MesAm</th>
<th>$U(C_m; L_r)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>Amuzgo</td>
<td>Otomanguean</td>
<td>1</td>
<td>1 0 0 0 1</td>
</tr>
<tr>
<td>+</td>
<td>Chatino</td>
<td>Otomanguean</td>
<td>1</td>
<td>1 1 0 0 0</td>
</tr>
<tr>
<td>+</td>
<td>Cuicatec</td>
<td>Otomanguean</td>
<td>1</td>
<td>1 1 0 0 0</td>
</tr>
<tr>
<td>+</td>
<td>Tlapanec</td>
<td>Otomanguean</td>
<td>1</td>
<td>1 1 0 0 0</td>
</tr>
<tr>
<td>+</td>
<td>Trique</td>
<td>Otomanguean</td>
<td>1</td>
<td>1 1 0 0 0</td>
</tr>
<tr>
<td>–</td>
<td>Huichol</td>
<td>Uto-Aztecan</td>
<td>–</td>
<td>1 0 0 1 1</td>
</tr>
<tr>
<td>–</td>
<td>Nrh. Tepehuan</td>
<td>Uto-Aztecan</td>
<td>–</td>
<td>1 0 0 1 1</td>
</tr>
<tr>
<td>–</td>
<td>Lower Pima</td>
<td>Uto-Aztecan</td>
<td>–</td>
<td>0 0 0 1 1</td>
</tr>
<tr>
<td>–</td>
<td>Tarahumara</td>
<td>Uto-Aztecan</td>
<td>–</td>
<td>0 0 0 1 1</td>
</tr>
<tr>
<td>–</td>
<td>Chichimec</td>
<td>Otomanguean</td>
<td>–</td>
<td>0 0 0 1 1</td>
</tr>
<tr>
<td>–</td>
<td>Lenca</td>
<td>isolate</td>
<td>–</td>
<td>0 0 0 1 1</td>
</tr>
<tr>
<td>–</td>
<td>Rama</td>
<td>Chibchan</td>
<td>–</td>
<td>0 0 0 1 1</td>
</tr>
<tr>
<td>–</td>
<td>Matagalpa</td>
<td>Misumalpan</td>
<td>–</td>
<td>0 0 0 1 1</td>
</tr>
<tr>
<td>–</td>
<td>Sumu</td>
<td>Misumalpan</td>
<td>–</td>
<td>0 0 0 1 1</td>
</tr>
<tr>
<td>–</td>
<td>Tol</td>
<td>isolate</td>
<td>–</td>
<td>0 0 0 1 1</td>
</tr>
<tr>
<td>–</td>
<td>Paya</td>
<td>Chibchan</td>
<td>–</td>
<td>0 0 0 1 1</td>
</tr>
<tr>
<td>–1</td>
<td>Miskitu</td>
<td>Misumalpan</td>
<td>–</td>
<td>0 0 0 0 0</td>
</tr>
</tbody>
</table>

#### 3.2 Areal distribution of branching indices in Mesoamerica

Some remarkable facts can be seen from Table 4. First, it is interesting to note that the branching indices cut across language families. Uto-Aztecan ranges from -0.2 (Lower Pima, Tarahumara) to 1 (Nahuatl), Otomanguean from -0.47 (Chichimec) to 1 (e.g. Otomí), and Mixe-Zoquean from .60 (Mixe, Chiapas Zoque) to 1 (Popoluca). Only Mayan languages show little variation. With the exception of some members of the Central branch, they score 1. Still, we can conclude that the branching tendency of a language cannot be predicted from its genetic affiliation.

Second, branching indices are clearly higher inside Mesoamerica than outside of it. The Mesoamerican average is .86, and the lowest score of a Mesoamerican language is .47 (some Otomanguean languages). Most of the southern neighbours show a tendency towards left-branching
constituent structure, with an average score of -0.42. With the exception of the “partly Mesoamerican” languages Cora, Huichol, Northern Tepehuan and Southern Tepehuan, the northern neighbours likewise have branching indices below zero. These numerical results illustrate the claim that Mesoamerican languages are predominantly right-branching, and that this feature sets them apart from their non-Mesoamerican neighbours.

However, the implications of the data presented in Table 4 reach even farther. Figure 3 demonstrates the areal distribution of branching indices in Mesoamerica (for a language key, cf. Figure 6 in the Appendix). The first remarkable fact about Figure 3 is that certain branching indices cluster geographically. In the Central Highlands around the Valley of Mexico (A), there are a number of languages scoring 1. In the region around the so-called “Mesa del Sur” (B; in the following ‘the Oaxaca Region’), we find a couple of contiguous languages scoring .47. Languages spoken in the eastern part and in the south-eastern periphery of Mesoamerica (C) score 1 or .73. Only in the north-western periphery (D) can considerable variation be observed, especially if the ‘partly Mesoamerican’ languages are taken into account.

Figure 3. Areal distribution of branching indices

10 The maps are intended to approximately reflect the geographical distribution of the languages at the time of contact prior to the conquest, based on the map provided by Moseley & Asher (1994, Map 13).
A further striking observation can be made when we check Figure 3 against the data shown in Table 4: there are clear implicational relations in the areal distribution not only of branching indices, but also of specific word order patterns. This means that adjacent languages with identical branching indices generally have identical word order patterns too. If adjacent languages have different branching indices, the set of right-branching constructions of the language with the lower branching index is a subset of the set of right-branching constructions of the language with the higher branching index. In central Mesoamerica (A), all languages are consistently right-branching. Some of the languages located at the south-eastern periphery of this central area (e.g. Chinantec, Mazatec, Popoloc) differ only in one construction (C4). In the Oaxaca Region (B), most languages are furthermore left-branching in C5. In eastern and south-eastern Mesoamerica, most languages are consistently right-branching again. Adjacent Mixe-Zoquean languages deviate from that pattern only in C2 (i.e. they are postpositional).11

3.3 Branching indices and archaeological evidence

The areal patterns displayed in Figure 3 are certainly no coincidence. They closely parallel traditional archaeological sub-divisions of Mesoamerica, which are displayed in Figure 4. Among the seven regions that are distinguished in Figure 4, three can reasonably be grouped together from a historical perspective: the Northern Region, the Central High Plains Region, and the Gulf Coast Region can be regarded as representing a unit within the larger historical context of Mesoamerica. I will refer to this area as the “Central Region” in the following (cf. the dotted line in Figure 4).12

The Central Region has been a centre of political power and the target of migration movements throughout the history of Mesoamerica. Consequently, it has been a focus of language contact. The archaeological divisions shown in Figure 4 reflect settlement and migration patterns and can be used as an approximate indicator of regional coexistence. The match

11 Note that some grammatical descriptions of Chiapas Zoque describe that language as GN (e.g. Harrison et al. 1981), but during my own field work in 2002 I got the impressions that NG has by now become prevalent.

12 The Central Region corresponds approximately to the core of the Aztec empire at the end of the XVth century. From a linguistic point of view, it is characterized by widespread devoicing of final sonorants and prefixal reflexivization strategies, among other features.
between Figure 3 and Figure 4 is a further indication that the regional clustering of branching indices is due to language contact.

**Figure 4.** Archaeological sub-divisions of Mesoamerica

The correspondences between the areal distribution of branching indices (Figure 3) and the archaeological sub-divisions shown in Figure 4 are summarized in Table 5. This table also indicates the areal distribution of language families relative to the regions of Mesoamerica and typical word order patterns. Note that Mixe-Zoquean languages cannot clearly be assigned to any particular region. They are located in the peripheral parts of the Central Region, the Oaxaca Region, and the Maya Region. This is reflected in their branching indices (.84, on an average), which range between those of the Central Region and Maya Region (1) on the one hand, and those of the Oaxaca Region (.47) on the other.
Table 5. Regions, branching indices, constructions, language families

<table>
<thead>
<tr>
<th>Regions of MA</th>
<th>Ib</th>
<th>Typical word order patterns</th>
<th>Language families/phyla</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Mexico Region</td>
<td>1</td>
<td>various</td>
<td>Uto-Aztecan, Otomí enclaves, Tarascan</td>
</tr>
<tr>
<td>Central Region</td>
<td>1</td>
<td>V-O, Ad-NP, N-G, POSS-N’, DEM-N’, NUM-N’</td>
<td>Uto-Aztecan (Nahuatl), Maya (Huastec), Totonac-Tepehua, Otomanguean (Otomí etc.), Mixe-Zoquean (Sierra Popoluca)</td>
</tr>
<tr>
<td>Oaxaca Region</td>
<td>0.47</td>
<td>V-O, Ad-NP, N-G, N’-POSS, N’-DEM, NUM-N’</td>
<td>Eastern Otomanguean</td>
</tr>
<tr>
<td>Maya Region</td>
<td>1</td>
<td>V-O, Ad-NP, N-G, POSS-N’, DEM-N’, NUM-N’</td>
<td>Maya, Nahuatl enclaves</td>
</tr>
<tr>
<td>Southern Region</td>
<td>1</td>
<td>V-O, Ad-NP, N-G, POSS-N’, DEM-N’, NUM-N’</td>
<td>Tlapanec-Mangue (Otomanguean), Nahuatl enclaves</td>
</tr>
</tbody>
</table>

3.4 Phylogenetic diversity and structural homogeneity

The rightmost column of Table 5 shows that the Central Region is distinguished from the other regions of Mesoamerica by a particularly high degree of “phylogenetic diversity” (cf. Nettle 1999 for this term). The ratio of language families to languages is remarkably high in this area. While each of the other regions is associated with a preponderance of languages from a specific family, in the relatively small Central Region languages from at least five different families are spoken: Uto-Aztecan (Nahuatl), Otomanguean (Otomí, Southern Pame, Matlazinca, Mazahua), Mixe-Zoquean (Popoluca), Totonac-Tepehua, and Mayan (Huastec).

Considering this high degree of phylogenetic diversity, it is remarkable that the languages of the Central Region are structurally so similar, and so homogeneous. This homogeneity is even more remarkable in view of the fact that at least two of the families involved—Uto-Aztecan and Mixe-Zoquean—were formerly heavily left-branching and have adopted right-branching structure only as a consequence of language contact. Campbell et al. (1986: 555) notice that “Proto-Uto-Aztecan is sufficiently well-known to make clear when Nahuatl has changed to

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13 The Central Region corresponds to approximately a fifth part of the Balkans in size.
become more MA [Mesoamerican, VG]”. Langacker (1977) demonstrates that Proto-Uto-Aztecan was OV, GN, and postpositional. In Popoluca, right-branching structure is also probably a consequence of language contact. Proto-Mixe-Zoque was predominantly left-branching, and verb-initial word order, genitive constructions of the type NG, and prepositions are relatively recent developments in Mixe-Zoquean (for a comparative survey of Mixe-Zoquean, cf. Wichmann 1995).

As far as the other languages of the Central Region are concerned, no safe information is available about their former branching tendencies. All Otomanguean languages spoken in the Central Region belong to the Otopamean branch of Otomanguean. It is thus difficult to decide whether their right-branching structure is to be attributed to a common ancestor language (Proto-Otopamean), or whether it is an areal feature of the Central Region. In the case of Totonac-Tepehua, we cannot say anything about its former branching tendency because we lack comparative evidence. Huastec Maya has inherited its right-branching structure from Proto-Mayan.

The central question that arises when we consider the facts presented in this section is: Why have Mesoamerican languages, in particular the languages of the Central Region, become structurally so homogeneous?

The answer to this question must obviously be sought in the realm of language contact. We should not, however, expect the sociolinguistic aspects of language contact to be particularly revealing in this context. Political dominance, prestige, and social networks cannot tell us anything about long-term areal convergence, since they are subject to change in the course of time. Mesoamerica has witnessed the hegemony of several different cultures and languages in the last two thousand years. I will therefore assume that the principles underlying structural homogeneity in the languages of Mesoamerica are of a different kind: they are functional, not social, in nature. By functional aspects of language use I refer to those factors that relate to the efficiency of language as a medium of communication. Unlike social factors, they do not change with time; they are a constant of language change.14

The explanation put forward in the next section is based on Hawkins’ (1994, 2004) theory of Early Immediate Constituents (EIC) or, more generally, on his Performance-Grammar Correspondence Hypothesis. Hawkins (1994) has demonstrated that consistency in branching direction

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improves the processing efficiency of languages, and that consequently, languages tend to be structurally homogeneous in the sense outlined above. I would like to argue that this tendency can explain why contact between structurally diverse languages should lead to homogeneity rather than heterogeneity, and why the relevant processes of change should happen relatively quickly, in comparison with purely language-internal developments. The argument starts with a brief survey of Hawkins’ (1994) theory of Early Immediate Constituents. Drawing on Kirby (1999), it is demonstrated how Hawkins’ theory can be implemented into an evolutionary model of language change: language change is conceived of as a product of the interaction between variation and selection. In linguistic areas, so the argument goes, this adaptive process is particularly productive because language contact multiplies language-internal structural variation. Structural variation, in turn, offers speakers a choice and allows for the selection of those structures that optimize Early Immediate Constituent recognition best.

4. Towards an explanation

4.1 Early Immediate Constituents

Hawkins (1994, 2004) has demonstrated that, in grammar and in performance, languages and speakers tend to arrange constituents in such a way that the human parser is able to recognize the higher-level constituent structure as early as possible (cf. also Wasow 1997, 2002). His theory correctly predicts both the cross-linguistic correlations found by Dryer (1992) and performance-driven rearrangement rules in single languages such as heavy-NP shift in English. As pointed out in Section 2, one of the most important corollaries of Hawkins’ theory is the fact that consistency in branching direction yields Early Immediate Constituent recognition optimal. Structurally homogeneous languages are ‘user-friendly’ insofar as they facilitate online-processing.

Hawkins’ (1994) theory is based on the assumption that the linear linguistic input is immediately transformed into hierarchical structures by the human parser. Each segment of speech is automatically analyzed with regard to the information it contains about the higher-level constituent structure. In this process, specific segments uniquely identify their “mother nodes”. For example, the occurrence of a verb gives the parser the
instruction to construct a VP (over V); a determiner uniquely identifies its mother node as an NP; prepositions identify their mother nodes as PPs. Hawkins refers to these prominent segments as “mother node constructing categories” (MNCC, cf. Hawkins 1994: 62). Any segment that does not uniquely identify its mother node is, according to Hawkins, immediately attached to a higher projection that is available in the syntactic environment. Thus, all segments of speech will be specified with regard to their position in the hierarchical sentence structure as quickly as possible. Those segments that cannot be assigned a structural position are stored in a “look-ahead buffer” and will be attached as soon as a structural position becomes available.

In Hawkins (2004), the idea of ‘parsing efficiency’—a principle which benefits the hearer—has been generalized to ‘processing efficiency,’ i.e. a concept which applies not only to language comprehension but also to languages production. In other words, Hawkins assumes that the principles of efficiency governing language production are identical to those governing language comprehension. Even though this is certainly plausible, it is probably not beyond doubt. Given that a purely hearer-based explanation has been shown to be feasible by Kirby (1999), I will focus on comprehension/parsing in the following, but nothing really hinges on this.

4.2 Early Immediate Constituent recognition and language change

In order to illustrate how language change has actually optimized Early Immediate Constituent recognition in Mesoamerica, let us briefly consider an example: the introduction of prepositions into the grammar of Nahuatl. Comparative evidence clearly shows that Proto-Aztecan was postpositional (cf. Langacker 1977). In the XVth century postpositions were still very common in Nahuatl and represented the canonical choice as opposed to relational nouns, which gradually started to replace them. Example (5) illustrates the use of the postposition nawak ‘close to’\(^\text{15}\) in the Madrid Codex:

\(^\text{15}\) Some Nahuatl specialists may prefer analyzing nawak as a suffix since it is closely attached to the noun in phonological terms. Semantically, however, it takes scope over the DP. The most accurate term would probably be ‘phrasal suffix’.
Example (5) has the hierarchical structure \([\text{VP } \text{kinnetšikoa} [\text{AdP } [\text{NP in ikal} \text{ nawak}]])\). The Phrasal Combination Domain (or ‘Constituent Recognition Domain,’ in terms of Hawkins 1994) extends over the whole VP. Considering \text{ikal nawak} as two words, example (5) has an IC-to-word ratio of \(0.5\) \((=2/4;\) four words must be processed in order to recognize two immediate constituents). The PP immediately dominated by VP cannot be constructed until the postposition \text{nawak} has been processed. Meanwhile, the parser is exposed to a garden-path structure, since \text{ikal} could also be considered an immediate constituent of VP, in which case it would be interpreted as a direct object \([\text{VP } \text{kinnetšikoa} [\text{NP ikal}], ‘he gathered his house[s]’\]).

After the conquest, Nahuatl gradually lost its postpositions. Forms like \text{nawak} were reanalyzed as relational nouns and increasingly used as (head-marking) prepositions in combination with person markers (e.g. \text{i-nawak i-ikal}, lit. ‘its-closeness his-house’; this construction mirrors common genitive NPs). In most contemporary varieties of Nahuatl (e.g. Tetelcingo Nahuatl, cf. Tuggy 1979), the form \text{nawak} has been lost, and the semantically more general form \text{-pa} (formerly also a postposition) is used. Moreover, the third person form \text{i-pa} has been generalized to the first and second person, so \text{ipa} is now used as an invariant preposition (cf. Tuggy 1979: 62). (6) is the (contemporary) Tetelcingo Nahuatl translation of (5):

\[
(6) \text{ kinsentlʃsha ipa ika }
\]

\[
\text{kin-sentlʃsha \quad ipa \quad i-kaL}
\]

\[
\text{3PL.OBJ-gather \quad PREP \quad 3POSS-house}
\]

‘He gathers them at his house.’

From the perspective of processing ease, (6) is more efficient than (5). The VP \([\text{VP kinsentlʃsha} [\text{AdP ipa} [\text{NP ikal}]])\] allows for the recognition of all immediate constituents after the preposition \text{ipa} has been processed. The verb form \text{kinsentlʃsha} constructs the VP, and \text{ipa} constructs the AdP/PP, which immediately attaches to the VP. (6) thus has an (optimal) IC-to-word ratio of \(1\) \((=2/2;\) two words for two immediate constituents). The innovative
construction illustrated in (6) is therefore more ‘user-friendly’ than the conservative one illustrated in (5).

Developments such as the introduction of prepositions into the grammar of Nahuatl have occurred pervasively in the history of Mesoamerican languages, and are still occurring. For example, Zoquean languages have witnessed a partial loss of postpositions at the expense of prepositions that have been borrowed from Spanish. At the same time, some of the Zoquean languages have shifted from GN to NG word order. Both developments improve Early Immediate Constituent recognition, since probably all Mixe-Zoquean languages are VO by now. Likewise, Tarascan has enlarged its inventory of prepositions, for the most part by borrowing from Spanish (for instance, \textit{para}).

### 4.3 Variation and Selection in Natural Language

Hawkins’ (1994, 2004) theory offers a natural explanation for why languages should tend to have a homogeneous surface syntax. It does not, however, fully account for the actual processes that lead to structural homogeneity from a diachronic perspective, since there is wide consensus that language is not in general actively shaped by languages users (and Early Immediate Constituent recognition is probably not a principle that speakers are even aware of). In order to explain how and why Mesoamerican languages have developed a homogeneous constituent order, it is thus necessary to consider the specific processes of change at the micro-level as well.

Kirby (1999) has demonstrated how Hawkins’ theory of Early Immediate Constituents can be implemented into a model of language change by adopting an evolutionary approach. His analysis is based on Hawkins’ (1994) hearer-based account of processing efficiency. The main question that needs to be addressed is, as Kirby puts it, “the puzzle of fit”, i.e. the question of how a \textit{parsing} preference for certain structures can result in a modification of the grammar. Evolutionary models of language change such as the one advocated by Kirby rely on the assumption that language change is “based on the interplay between variation and selection” (Keller 1994: 144). This means that language change occurs in two steps: first, variation is generated, and second, specific variants are selected at the expense of others. This process is usually regarded as ADAPTIVE, i.e. as responding to specific environmental circumstances, and as improving the interaction of an organism with these circumstances. This
model of language change is illustrated in Figure 5. The initial state $S_0$ represents a certain ‘source grammar’. As a result of innovation, (lexical or grammatical) variants are introduced into the language. In a next step, some of these variants are filtered out, while others are selected. This leads to the final state $S_f$. The process is cyclic, so that $S_f$ is at the same time $S_0$ of a successive adaptive process.

**Figure 5. Variation and selection in language change**

Kirby assumes that structures with optimal EIC metrics are preferentially accepted as “trigger experiences” in language acquisition, and that “the probability of a particular utterance being used for acquisition will be proportional in some way to its EIC metric” (Kirby 1999: 36f.). This is designed as a process of (functional) selection. The learner filters the raw linguistic input and separates out dysfunctional variants. One of the examples provided by Kirby is the selection of prepositions at the expense of postpositions in VO languages. This example is compatible with the development of Nahuatl from a postpositional language to a prepositional language outlined above:

First, imagine a language with basic VO order and postpositions. According to Hawkins, such a language would suffer from a suboptimal EIC metric in structures such as $vp[VP \_{pp}[NP \ P]]$, since the CRD [Constituent Recognition Domain] for the verb phrase stretches across the noun phrase. Now, if a minor variant – prepositions – were introduced into that language, perhaps through language contact, then we would expect it to be preferentially selected from the arena of use by hearers because of its improved EIC metric. (Kirby 1999: 45)

Kirby’s model focuses on how linguistic variants are (functionally) selected in language acquisition. But then, selection requires the existence of at least two competing variants, i.e. two linguistic forms that may be used interchangeably to designate one and the same concept. In other words: *selection presupposes variation*. In order to fully account for the adaptive “interplay between variation and selection” (Keller 1994: 144), we must consequently also address the question of how variation arises. Kirby gives
us a first clue as to possible sources of variation. In his example, he conjectures that in his imaginary language, prepositions were introduced “through language contact”. When considering the languages of Mesoamerica, this is indeed a likely scenario: language contact led to the use of novel structures in the languages involved and gave rise to the type of structural variation that is necessary for selection to work. In other words: language contact acted as a source and amplifier of structural variation, thus feeding the evolutionary process. Consequently, those structures which optimize Early Immediate Constituent recognition best could be selected via functional selection.

Note that this simplified model of ‘EIC optimization’ will certainly not be accepted by all “evolutionary linguists”. Not all linguists subscribing to an evolutionary model—for instance, W. Croft—accept the role of functional factors in selection as assumed by Kirby (1999) and argue that the process of selection is primarily governed by social factors (see also Haspelmath 1999, 2000 for discussion). However, my basic claim that language contact should lead to structural homogeneity is not really affected by this controversy. Croft (1999, 2000) assumes that functional factors of language use are operative in the production of novel variants, that is, in the process of innovation. If innovations are constrained by functional factors, there should be a preponderance of functional variants vis-à-vis dysfunctional variants in the “lingueme pool” of a language (i.e. the pool of linguistic entities such as phonemes, morphemes, rules, etc.). If selection is indifferent to the functionality of a linguistic feature, there is simply an arithmetic probability that more functional variants will be selected. As Croft himself puts it:

If functional constraints operate to determine the frequency of innovations, and the novel variants undergo social selection, then the end result is going to be a preponderance of optimal variants in the long run. (Croft 1999: 207)

5. Conclusions

The present study started from the empirical observation that Mesoamerican languages are structurally very similar. Adopting a standard representation of constituent structure in terms of X-bar theory, it was argued that Mesoamerican languages display a high degree of structural homogeneity insofar as they tend to be consistently right-branching. For
illustration, a metric indicating the branching tendency of a language was proposed (the ‘branching index’ $I_b$). This metric allows us to make numerical statements about the branching tendencies of languages, thus providing a means of comparison.

The tendency of Mesoamerican languages to show homogeneous surface structure has been explained in terms of Hawkins’ (1994, 2004) theory of Early Immediate Constituents. An evolutionary model of language change has been adopted in order to account for the instantiation of parsing principles in actual language (Kirby 1999). It has been argued that an evolutionary model along these lines can also explain why phylogenetic diversity has led to structural homogeneity in Mesoamerican languages: Language contact is a source of structural variation and feeds the evolutionary process based on variation and selection by offering speakers a choice.

**Appendix**

List of glosses

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>POSS</td>
<td>possessive pronoun or prefix</td>
</tr>
<tr>
<td>PSR</td>
<td>possessor</td>
</tr>
<tr>
<td>PSM</td>
<td>possessum</td>
</tr>
<tr>
<td>CL</td>
<td>clitic</td>
</tr>
<tr>
<td>DET</td>
<td>determiner</td>
</tr>
<tr>
<td>NUM</td>
<td>numeral</td>
</tr>
<tr>
<td>PRED</td>
<td>predicate</td>
</tr>
<tr>
<td>Ad</td>
<td>adposition (preposition or postposition)</td>
</tr>
<tr>
<td>GEN</td>
<td>genitive</td>
</tr>
<tr>
<td>PRO</td>
<td>pronoun</td>
</tr>
<tr>
<td>PL</td>
<td>plural</td>
</tr>
<tr>
<td>OBJ</td>
<td>object</td>
</tr>
<tr>
<td>P(REP)</td>
<td>preposition</td>
</tr>
</tbody>
</table>
Figure 6. Sample of Mesoamerican languages used for the study
References


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Elizabeth Hogbin and Jae Jung Song

The Accessibility Hierarchy in Relativisation: The Case of Eighteenth- and Twentieth-Century Written English Narrative

Abstract

This article aims to test Keenan and Comrie’s (1977) Accessibility Hierarchy, together with Fox’s (1987) Absolutive Hypothesis, on the basis of eighteenth- and twentieth-century written English narrative data. While the patterns of relativisation differ very little across the two centuries, relativisation on intransitive subject (S-RCs) and on direct object (DO-RCs) occurs more frequently than relativisation on transitive subject (A-RCs) and on oblique (OBL-RCs). Moreover, OBL-RCs outnumber A-RCs. On the other hand, relativisation on genitive (GEN-RCs) occurs very infrequently and relativisation on indirect object (IO-RCs) is unattested. It is suggested that the high frequency of S-RCs and OBL-RCs falls out from written narrative requiring a considerable amount of description in order to indicate the states of people or other entities, or to set the scene. The high frequency of DO-RCs follows from Fox’s (1987) suggestion that one of the main functions of RCs is to anchor the head NP in discourse; the other NP in a DO-RC, i.e. the transitive subject NP, tends to be pronominal, and, therefore, a good anchor. The infrequently occurring RCs, i.e. A-, GEN-, and IO-RCs, tend to be formed on grammatical relations that typically appear in pronominal form. In these RCs, therefore, the functions of RCs, whether to distinguish, describe, or anchor, become largely irrelevant. Thus, accessibility in relativisation is not so much motivated by a hierarchy of grammatical relations as by discourse preferences or properties.

1 This is a revised version of our article entitled: “Patterns of relativisation in eighteenth- and twentieth-century written English narrative: A functional-typological perspective,” included in an in-house publication (Colin Gibson and Lisa Marr (eds.) (2005), New Windows on a Woman’s World: Essays for Jocelyn Harris, pp. 182–208, Dunedin: Department of English, University of Otago). The decision to submit it to a linguistics journal was motivated by the realisation that the original article, buried in the midst of literature articles, was not really being disseminated to those who could make use of it. The authors are grateful to two anonymous SKY Journal of Linguistics referees for their useful comments and suggestions. The article is better because of their input.
1. Introduction

Relativisation or relative clause formation—along with basic word order and case marking—occupies a very prominent place in linguistic typology. Indeed, Keenan and Comrie’s (1977) research on relativisation is regarded as “one of the most influential works in the language universals literature” (Fox 1987: 856). The influence of this study is not confined to the language universals literature per se, but has been extended to other major areas of linguistics, including first language acquisition (e.g. Clancy, Lee and Zoh 1986), second language acquisition (e.g. Gass 1979, 1982; Eckman, Bell and Nelson 1988; Aarts and Schils 1995), and psycholinguistics (Keenan and Hawkins 1987).

The primary objective of this article is to ascertain the validity of Keenan and Comrie’s (1977) constraints on relativisation in the context of written English narrative across two centuries. There are at least two reasons why it is important to extend Keenan and Comrie’s work to written narrative from different periods of time. First, it is interesting to find out whether Keenan and Comrie’s constraints, formulated on the basis of elicited data, will also be attested in written narrative, especially in such a highly codified language as English. Second, if the constraints on relativisation are indeed universal as they are claimed to be, the expectation is that they will hold, irrespective of which period of the history of English (or of any language, for that matter) data is drawn from. Should, however, this expectation fail to be borne out by the data, an interesting question will arise as to why. For example, it will need to be determined what other factors or exigencies may have a bearing upon the way relative clauses are formed in one and the same language at different times in history.

On the basis of eighteenth- and twentieth-century written English narrative data, the present article aims to test not only Keenan and Comrie’s constraints on relativisation but also Fox’s (1987) Absolutive Hypothesis, which poses a challenge to the “subject primacy” embodied in Keenan and Comrie’s work. The results of the eighteenth- and twentieth-century text counts reveal that, while the patterns of relativisation differ very little across the two centuries, relativisation on intransitive subject and on direct object occurs more frequently than relativisation on transitive subject. Moreover, relativisation on oblique outnumbers that on transitive subject. Relativisation on genitive and on indirect object, on the other hand, occurs very infrequently and is unattested, respectively. It will be suggested that the high frequency of relativisation on intransitive subject and oblique falls out from written narrative requiring a considerable amount of
description in order to indicate the states of people or other entities, or to set the scene. The high frequency of relativisation on direct object, as opposed to the low frequency of relativisation on transitive subject, follows from Fox’s (1987) suggestion that one of the main functions of relative clauses is to anchor the head NP in discourse; the other NP in the former type of relativisation, i.e. the transitive subject NP, tends to be pronominal, and, therefore, a good anchor, whereas the other NP in the latter type, i.e. the direct object NP, tends to be a full NP, and, therefore, not a good anchor. It will also be demonstrated that the infrequently occurring relativisation types (i.e. on transitive subject, genitive and indirect object), tend to be formed on grammatical relations that typically appear in pronominal form. In these relative clause types, the functions of relativisation, whether to distinguish, describe, or anchor, become largely irrelevant. Thus, accessibility in relativisation does not seem to be so much motivated by a hierarchy of grammatical relations as by discourse preferences or properties.

The rest of this article is organised as follows. In section 2, Keenan and Comrie’s Accessibility Hierarchy, together with Fox’s Absolutive Hypothesis, is explained as a theoretical prelude to the main investigation. Section 3 discusses the objectives of the article. Section 4 describes how texts were sampled. Also discussed there is what does or does not count as a relative clause in the context of the present study. Section 5 provides the results and some general observations, especially in comparison with the findings of Keenan and Comrie (1977), Keenan (1975), and Fox (1987). The conclusions to be drawn from the study are provided in section 6.

2. The Accessibility Hierarchy in relativisation

The relative clause (hereafter, RC) construction, as is generally understood, consists of two components: the head noun and the restricting clause. The semantic function of the head noun is to establish a set of entities, which may be called the domain of relativisation, following Keenan and Comrie (1977: 63), whereas that of the restricting clause is to identify a subset of the domain—a one-member subset in the case of (1) below—by imposing a semantic condition on the domain of relativisation referred to by the head noun. In the following example, the head noun is the PhD student, and the restricting clause whom Professor Smith supervised.
The PhD student whom Professor Smith supervised won the prize.

In (1), the domain of relativisation is denoted by the head noun *the PhD student*. This domain of relativisation is then “narrowed down,” as it were, to the only entity that can satisfy the condition expressed by the restricting clause *whom Professor Smith supervised*. It is in this sense that the restricting clause has traditionally been understood to modify the head noun, hence the alternative label of the attributive clause.

The primary objective of Keenan and Comrie’s (1977) cross-linguistic study is to examine formal constraints on relativisation. They focus on the grammatical relation of the head noun within the restricting clause. Based on a sample of some fifty languages, Keenan and Comrie discover that, although languages vary with respect to which grammatical relations can or cannot be relativised on, they may not do so randomly. For instance, there are no languages in their sample that cannot relativise on subject, although there are languages which can relativise on subject only. In other words, all languages must have at least one relativisation strategy whereby subjects are relativised on. This relativisation strategy is referred to by Keenan and Comrie as the “primary strategy” (1977: 68). There is also a very strong tendency for relativisation strategies to apply to a continuous segment of a hierarchy of grammatical relations or the Accessibility Hierarchy (AH hereafter), as defined in (2).

\[(2) \text{ SBJ} > \text{DO} > \text{IO} > \text{OBL} > \text{GEN} > \text{OCOMP} \]

N.B.: “\(\)” = “is more accessible to relativisation than”; SBJ = subject, DO = direct object; IO = indirect object; OBL = oblique; GEN = genitive; and OCOMP = object of comparison

The primary strategy, which must by definition apply to subject relation, may also continue to apply to “lower” relations on the AH, and, at the point where it ceases to apply, other relativisation strategies may or may not take over and apply to a continuous segment of the AH. Relativisation strategies, including the primary strategy, may “switch off” at any point on the AH, but they should, in principle, not “skip” on the AH. English is one of the rare languages which can relativise on all the grammatical relations on the AH. This language thus serves as a good example by which the AH can be illustrated with respect to relativisation. Consider
(3) the girl who swam the Straits of Dover [SBJ]
(4) the girl whom the boy loved with all his heart [DO]
(5) the girl to whom the boy gave a rose [IO]
(6) the girl with whom the boy danced [OBL]
(7) the girl whose car the lady bought for her son [GEN]
(8) the girl who the boy is taller than [OCOMP]

The majority of the world’s languages, however, are not as generous as English in their relativising possibilities. In fact, the very nature of the AH is grounded on the observation that there are more languages which can—whether by primary or non-primary relativisation strategies—relativise on subject than languages which can also relativise on direct object, on direct object than also on indirect object, on indirect object than also on oblique, and so forth.

Keenan and Comrie (1977) suggest that the AH reflects the psychological ease of comprehension (and presumably also of production): The leftmost position on the AH or subject relation is the easiest to process and, consequently, the most accessible to relativisation; conversely, object of comparison is the most difficult to process and, consequently, the least accessible to relativisation. In particular, subject is claimed to hold cognitive prominence unattained by the other grammatical relations on the AH. This may explain why there are languages which can relativise on subject only, while there are no languages that cannot relativise on subject.

Subject relation, however, has been questioned by Fox (1987), who demonstrates that, in natural English discourse, intransitive subject and direct object are treated preferentially in relativisation as opposed to transitive subject—hence her Absolutive Hypothesis. The reason for this is that, unlike intransitive subject and direct object, transitive subject tends to carry given or old information, thereby functioning as an excellent anchor to the preceding discourse. This difference in their discourse roles is claimed to give rise ultimately to the predominance in natural discourse of the relativised noun phrase (NP) being in intransitive subject or direct object relation, as opposed to transitive subject relation, in the restricting clause. Fox’s findings, therefore, call into question subject relation as a single grammatical category on the AH. More importantly, Fox challenges the cognitive prominence attributed to Keenan and Comrie’s (1977) subject

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2 For the same position from the perspective of the human processor, consider Hawkins (1994, 2004).
primacy, and hence the psychological status of the overall AH. Regardless of whether subject primacy has its roots in cognition or discourse, it will be interesting to find out the frequency of relative clauses in terms of the AH in data other than elicited sentences (Keenan and Comrie) or naturally occurring conversations (Fox).

3. The present investigation

The degree of accessibility to relativisation captured in the AH is directly reflected in the cross-linguistic variation in relativisation: More languages can relativise on higher than lower grammatical relations on the hierarchy. This quantitative interpretation of the AH can be further extended to individual languages to the effect that subject relative clauses are predicted to occur more frequently in one and the same language than direct object ones and so on down the hierarchy. This was tested by Keenan (1975), whose text counts, in a variety of written English texts, indicate that the AH can be interpreted also in terms of the frequency of relative clauses in individual languages.

The main objective of the present study is, therefore, to test the same prediction as tested in Keenan (1975), but on the basis of narrative data taken from two different periods in history. Following from the kind of analyses offered in previous studies, the present analysis is based on the results of a series of text counts. These were made on chapters drawn at random from English-language novels written in first person narrative from the eighteenth and twentieth centuries. The counts recorded the frequency with which the features represented on the AH, namely the grammatical relations, occurred within the texts. It was intended that this would provide some indication of which grammatical relations are relativised on more frequently than others. This study will also investigate whether there is variation in the patterns of relativisation between the two time periods. In this respect, it will depart from previous studies, which deal with relativisation either across languages or within a single language at one point in time.

One additional thing to be closely examined in this study is the status of subject relation. As indicated in the previous section, the leftmost

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3 The reason for choosing first, as opposed to third, person narrative was that the present study was part of a larger one, which also examined the correlation between the so-called animacy hierarchy and different grammatical relations. Third person narrative would have precluded the use of the first person pronouns (i.e. outside direct speech).
position on the AH has been called into question. Thus, for purposes of counting instances of RCs, subject relation will be split into intransitive subject and transitive subject.

4. Selection of sample texts

In order to minimise the influence of authors’ personal preferences or idiosyncrasies on the text counts, the sample texts consist of chapters or extracts drawn from three novels from each of the two centuries. It is necessary that the chosen texts are as similar as possible. It would not be useful, for instance, to mix data from an informal note written to a friend with data from a formal legal document. Informal discourse tends to be less fixed in form than highly formal discourse and may allow for many of the constraints present in formal discourse to be relaxed; for example, restrictions on word order.

Aside from the disparities that may arise from variation in register, different genres may also exhibit different levels of “information pressure.” According to Du Bois (1987), there is a correlation between genre and information pressure, and hence a correlation between genre and the distribution of new and given NPs among grammatical relations. For instance, in discourse with high information pressure the intransitive subject position is most likely to be filled with new referents, whereas in discourse with low information pressure the intransitive subject position may be filled with as many given referents as new ones, if not more. In other words, information pressure may affect the numbers of pronominal and nominal intransitive subjects. In view of this kind of concern, the texts selected for this study belong to a similar genre and style. The texts analysed in this study come from six novels written in first person narrative:

4 One of the referees asks if the two text groups are really of the same genre, given “the changes in our culture over the last 200 years”. We do not wish to answer this question, except to say that it would require a very different kind of study to ascertain whether that is the case or not.
Regardless of any underlying motivations—such as satire or moral instruction—the chosen texts can be considered examples of the crime/adventure novel genre. Texts from that genre generally consist of straightforward narrative. This is an advantage in that such texts typically yield a high proportion of neutral constructions, particularly active declarative clauses. Moreover, narrative is a form of discourse not confined to a single genre or medium and thus has a relatively high degree of “naturalness,” compared to many other discourse forms (Brown 1983: 318; Hopper and Thompson 1980: 282), for example, legal texts or poetry. Although there will be no attempt in this study to make any claims of universality about the findings or to extend any hypotheses into more natural discourse such as conversation, it is important that the sample texts be as representative of everyday language as possible.

Six chapters were chosen from each novel. A sufficient number of extracts were provided for the relative clause count in order to ensure a sample of at least one hundred relative clauses, the size of Fox’s (1987) database. The selection process involved opening each of the novels to a page at random and taking the chapter/extract in which that page was contained. However, each of the chosen chapters was examined to ensure that it be a reasonable size (no less than 1,000 words) and, if not, another chapter/extract was selected. Extracts and chapters, rather than a set number of pages, were used in this study to ensure that each sample consist of a complete “story”. It was intended that this would provide context and better enable comparisons to be made between the findings of this study and those from studies that look at parameters such as discourse preferences.

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5 All the texts, with the exception of *The Street Lawyer*, which is written in American English, represent British English. This, however, has no bearing on the tendencies, observations and generalisations discussed in the article. Thus, what is true of the British English texts is also true of the American text, insofar as relativisation is concerned.
Since the intended focus of the study is written, not spoken, English, all passages of dialogue were excluded from the counts. Although it is possible that conversation in written discourse is not an entirely accurate representation of actual speech, it may also differ from the surrounding narrative in a number of respects. First, there tend to be greater numbers of second person pronouns in sections of direct speech than there are in sections of narrative. This does not come as a total surprise because the speaker is speaking to a specific addressee, rather than producing a monologue aimed at an unspecified audience. Second, there is likely to be an increase of deixis in direct speech. For example, in face-to-face dialogue, the speech act participants are usually aware of their shared surroundings and are therefore able to use other means of distinguishing or identifying different referents; for example, (9) instead of (10):

(9) The magazine is there.
(10) The magazine is on the coffee table.

Third, direct speech in the written narrative is often intended to be as representative of actual speech as possible and may contain features or properties that are not acceptable in the rest of the narrative. For instance, the speaker may unintentionally repeat elements of the clause, leave interrupted sentences unfinished, omit certain verbs or NPs, or change the typical word order to better meet the demands of discourse. Dialogue in written narrative may also include more colloquial or non-standard forms of language, as illustrated in (11) and (12).

(11) they shan’t catch me a-kissing of you (Defoe, p. 25)
(12) as us watches ’im, I looks down an’ sees there’s blood on me ’ands (Barnard, p. 93)

The inclusion of such material would not be helpful, given that an effort has been made to select texts similar in style and register.

The characterisation of RCs given in section 2, which is based on Keenan and Comrie’s (1977) definition of RCs, was interpreted as narrowly as possible for the purposes of the present study. What this means is that the italicised parts of the sentences in (13) will all be recognised as RCs, whereas those in (14) will not.

(13) The magazine is there.
(14) The magazine is on the coffee table.
ELIZABETH HOBGIN AND JAE JUNG SONG

(13)  a. The car which was parked in front of the house has been towed away.
    b. The man handing out the tickets checked his watch.
    c. Donna bought the dress she saw last Friday.

(14)  a. Susan sat on the chair under the window.
    b. Only the good children will be allowed to go outside.

It is possible to claim—and it has, indeed, been proposed (e.g. McCawley 1998)—that the italicised parts of (14a) and (14b) involve “reduced” RCs (cf. the chair which is under the window or the children who are good). However, these are not widely accepted as RCs, and the idea of reduced RCs itself is generally considered to be marginal or controversial (Mallinson and Blake 1981: 367). Although the exclusion of clauses such as (14) will have affected the potential numbers of RCs with heads which are intransitive subject NPs, the RCs included in this study are those whose form and acceptability is uncontroversial. Moreover, because Fox’s (1987) observation that intransitive subject is preferentially treated in relativisation as opposed to transitive subject is going to be tested in this article, any controversial instance of RC formed on an intransitive subject should be avoided where possible.

Also excluded from this study were so-called non-restrictive RCs, as exemplified in (15), because the italicised part is not used to identify a subset of the domain expressed by the head NP all teachers. The function of the non-restrictive relative clause is, instead, to provide incidental information about the already identified referent of the head NP.

(15)  All teachers, who last week got a pay rise, will now pay more tax.

Keenan and Comrie (1977) limit the RCs used in their study to those with definite head NPs. Fox (1987: 861), on the other hand, includes RCs with indefinite heads and points out correctly that there is no apparent reason why RCs with indefinite heads should be excluded. Both RCs with definite and indefinite head NPs were thus included in the present study, for the characterisation given earlier in no way suggests that the acceptability of an RC depends on the definiteness of its head NP. The RCs included in this study were then restrictive RCs with definite or indefinite head NPs and with an explicitly expressed verb inside the restricting clause.
As has already been explained, this article focuses on RCs in which the head NP has a grammatical relation in the main clause of the restricting clause. However, the sample texts also yielded a number of RCs in which the head NP had a grammatical relation in the subordinate clause of the restricting clause—three in the eighteenth-century count and six in the twentieth-century count. The majority of these were formed on direct objects, such as (16), and the remainder formed on obliques, such as (17).

(16) many of the goods he intended to buy were not ready (Swift, p. 128)
(17) a perplexity that I had not indeed skill to manage myself in (Defoe, p. 355)

The results of the count may follow the tendencies noted by Comrie (1989: 162), who states that there is “good cross-linguistic evidence for the surprising generalization that subordinate non-subjects are easier to relativize than subordinate subjects.” However, the sample texts yielded too few such RCs to enable any conclusions to be made about their accessibility to relativisation in written English narrative. Given the small number of tokens and that the AH is initially intended to apply to the grammatical relations in the “main” clause (e.g. (13)), the issue of relativisation from “subordinate” clauses (e.g. (16) or (17)) will not be dealt with any further in this study.

Another matter that will not be explored further, in the following discussion, is the absence from the text counts of RCs with object of comparison heads. Although that particular category is included on the AH, there has been some debate as to whether the inclusion is warranted. Kuno (1976: 427) suggests that, although Keenan and Comrie (1977) give English as an example of a language which can relativise on all positions on the AH, it is difficult to find perfectly grammatical examples of RCs formed on objects of comparison. In point of fact, Keenan and Comrie (1977: 74) themselves state that, although English “[does] have phrases such as ‘the man who Mary is taller than’ […] some [speakers] find them uncomfortable”. Therefore it is not altogether surprising that there are no RCs formed on objects of comparison in the sample texts. (In a way, the complete absence of such RCs in the text counts can be taken to be in support of the lowest position on the AH of OCOMP.)
5. Results and general observations

This section will begin with the results of the counts and some general observations about the data, including a comparison of results from the eighteenth- and twentieth-century texts. The findings of this study will then be compared to claims made by Keenan and Comrie (1977), Keenan (1975), and Fox (1987) to see how closely, if at all, the patterns of relativisability in written English discourse of the eighteenth and twentieth centuries reflect the predicted patterns of relativisation.

The following labels will be used for the sake of convenience: S-RC (relativisation on intransitive subject), A-RC (relativisation on transitive subject), DO-RC (relativisation on direct object), IO-RC (relativisation on indirect object), OBL-RC (relativisation on oblique), and GEN-RC (relativisation on genitive). Note that the present study included all obliques, whereas Keenan and Comrie (1977: 66) included only those which “express arguments of the main predicate […] rather than ones having a more adverbial function”. The inclusion of “more adverbial” as well as “argument-expressing” obliques seemed necessary in order to better understand the true function(s) of OBL-RCs. Each of these RCs is exemplified below.

(18) a. S-RC: ... the men who belonged to the shop (Defoe, p. 295)
    b. A-RC: ... the man who managed the estates (Francis, p. 13)
    c. DO-RC: The man whom they pursued ... (Defoe, p. 238)
    d. IO-RC: ... the child to whom Judith gave the apple
    e. OBL-RC: ... the place where Castle Walk began (Barnard, p. 99)
    f. GEN-RC: ... two volunteers whose names I never heard (Grisham, p. 107)

5.1 Eighteenth-century RCs

The eighteenth-century texts yielded 293 RCs, which line up in order of frequency (from most to least frequent) as follows: S-RCs, DO-RCs, OBL-RCs, A-RCs, and GEN-RCs (see Table 1). No IO-RCs were found in the sample extracts.

Although the results of the counts indicate a difference in the proportion of S-RCs and DO-RCs, they also indicate that the difference is very slight—less than 1%. This suggests that intransitive subjects and direct objects are almost equally ranked in terms of their relativisability. The combined numbers of S- and DO-RCs, which make up 64.1% of all RCs, further suggest that there is a strong preference for RCs with
intransitive subject or direct object head NPs in eighteenth-century written English narrative.

<table>
<thead>
<tr>
<th>RC Type</th>
<th>Number</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>S-RC</td>
<td>95</td>
<td>32.4</td>
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<tr>
<td>A-RC</td>
<td>39</td>
<td>13.3</td>
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<tr>
<td>DO-RC</td>
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<td>IO-RC</td>
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<td>OBL-RC</td>
<td>64</td>
<td>21.8</td>
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<tr>
<td>GEN-RC</td>
<td>2</td>
<td>0.7</td>
</tr>
</tbody>
</table>

Table 1. Frequency of Eighteenth-century RCs by Grammatical Relation of Head NP

The preference for A-RCs does not seem to be as strong as the preference for S-RCs, although in both cases the head NP is a subject. A-RCs make up only 13.3% of all eighteenth-century RCs counted, whereas the S-RCs make up 32.4%. This is despite the fact that, like the intransitive subject and direct object, the transitive subject is a core clausal argument. Indeed, in the texts used in this study, the argument status of an NP seems to have little, if any, bearing on relativisability. The oblique, for instance, is a non-core or peripheral element in the clause, but the percentage of OBL-RCs in the count is 8.5% greater than that of A-RCs.

The other grammatical relations—indirect object and genitive—are least preferred as the head of RCs. GEN-RCs are very infrequent, making up less than 1% of RCs, and the IO-RCs do not occur at all. However, whereas the low frequency of GEN-RCs is not particularly surprising—given the low rank of genitives on the AH—the absence of IO-RCs is more unexpected. Indirect objects occur in third highest position on the AH, outranking obliques and genitives but, despite this, both GEN-RCs and OBL-RCs outnumber IO-RCs in the text counts. Possible reasons for the lack of IO-RCs will be discussed later in 5.4.5.
5.2 Twentieth-century RCs

There were 361 RCs found in the twentieth-century texts. These occurred in order of frequency (from most to least frequent) as follows: DO-RCs, S-RCs, OBL-RCs, A-RCs, and GEN-RCs (see Table 2). Again, as in the eighteenth-century count, there were no occurrences of IO-RCs.

The results of the twentieth-century counts reveal that direct objects are the most frequently relativised grammatical relations. This differs from the eighteenth-century results, where the S-RCs outnumber the DO-RCs, statistically non-significant as it may be. The difference in the percentages of S-RCs and DO-RCs occurring in the twentieth-century texts is one of approximately 2.8%—slightly larger than the equivalent gap between the percentages of S- and DO-RCs in the eighteenth century, which was less than 1%. However, like the eighteenth-century result, the closeness of the figures for S-RCs and DO-RCs suggests that the two have a similar degree of accessibility to relativisation.

<table>
<thead>
<tr>
<th>RC Type</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-RC</td>
<td>107</td>
<td>29.6</td>
</tr>
<tr>
<td>A-RC</td>
<td>60</td>
<td>16.6</td>
</tr>
<tr>
<td>DO-RC</td>
<td>117</td>
<td>32.4</td>
</tr>
<tr>
<td>IO-RC</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>OBL-RC</td>
<td>72</td>
<td>19.9</td>
</tr>
<tr>
<td>GEN-RC</td>
<td>5</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Table 2. Frequency of Twentieth-century RCs by Grammatical Relation of Head NP

The difference in the frequency of twentieth-century A- and OBL-RCs, at 3.3%, indicates that the level of preference for transitive subjects and obliques occurring as RC heads is also about the same—although the obliques are preferred slightly more. The preference, or lack thereof, for GEN-RCs and IO-RCs is indicated by the very low frequencies of those RCs. The GEN-RCs, for example, make up only 1.4% of all RCs. They occur, however, slightly more frequently than the IO-RCs, which are absent from the twentieth-century texts, as they were from the eighteenth-century texts. It appears that IO-RCs, like RCs formed on objects of comparison, may be the least preferred choice of RC in written English. The similarity in the results of the eighteenth- and twentieth-century counts further
suggests that the reasons for the absence of IO-RCs may be applicable across time periods (again, refer to 5.4.5 for detailed discussion).

5.3 Comparison of eighteenth- and twentieth-century results

The results of the eighteenth- and twentieth-century text counts differ in a number of ways. Perhaps the most obvious variation is the change in the order of frequency of the S- and DO-RCs. In the eighteenth-century count, S-RCs occur more frequently than DO-RCs. In the twentieth-century count, DO-RCs occur more frequently than S-RCs. However, the difference is of no statistical significance, as the comparative percentages of S- and DO-RCs in both centuries vary by only a very small margin.

The eighteenth- and twentieth-century results also differ with respect to the size of the gap between the percentages of A-RCs and OBL-RCs. In the eighteenth-century count, OBL-RCs outnumber A-RCs by 8.5%, whereas in the twentieth-century count, OBL-RCs outnumber A-RCs by 3.3%. Reasons for the difference are not immediately apparent, although it seems to be due mostly to higher percentages of A-RCs in the twentieth-century texts—17% as opposed to 13%. If the numbers of DO-RCs were also greater in the twentieth-century count, the change may have been related to an increase in the number of RCs with transitive restricting clauses. However, the percentages of eighteenth-century and twentieth-century DO-RCs are very similar, at 31.7% and 32.4% respectively. Similarly, if the higher percentage of A-RCs were the result of a trend towards more RCs with subject heads, it would be expected that there would also be higher percentages of S-RCs in the twentieth-century texts. This is not borne out by the data, however, as twentieth-century S-RCs occur about 3% less frequently than do eighteenth-century S-RCs. In any case, the difference is of limited significance, as the relative frequencies of OBL- and A-RCs remain unchanged between the two time periods. Moreover, the gap between the two is not particularly large at under 6%.

Despite the differences in the results of the eighteenth- and twentieth-century counts, a number of general similarities have emerged. First, regardless of which is more frequent than the other, intransitive subjects and direct objects occur more frequently as RC heads than the other grammatical relations. Second, after the S-RCs and DO-RCs, the pattern of frequency of the other RCs, from most to least frequent, is as follows: OBL-RCs, A-RCs, and GEN-RCs. Third, in both centuries, there are no RCs formed on indirect objects (or objects of comparison). These
similarities suggest that the motivations behind RC formation have been more or less stable over time. Just what those motivations are, and to what extent they correlate with the claims made by Keenan and Comrie (1977) or Fox (1987), will be discussed in 5.5.

5.4 Preliminary suggestions

As indicated by the results of the text counts, some grammatical relations are more frequently relativised on than others. This section offers some preliminary suggestions as to the kinds of factors or exigencies that may bear upon accessibility to relativisation. It is intended that these will form a base for the main discussion and for the comparisons to be made between the findings of this study and those of Keenan and Comrie (1977), Keenan (1975), and Fox (1987).

5.4.1 The S-Relatives

The S-RCs are the most frequently occurring RCs in the eighteenth-century texts and the second most frequently occurring RCs in the twentieth-century texts. The majority of S-RCs—around 60% in both centuries—occur with stative verbs, particularly *be*. This suggests that S-RCs in written English narrative are used primarily to describe the states of people and other entities, in order to “set the scene” for the addressee. In other words, RCs, such as those illustrated below, enable the addressee to picture things, people, and situations that may be unfamiliar to her/him, or to locate entities and events within the discourse setting:

(19) [...] drest in cloaths that once were laced (Goldsmith, p. 14)
(20) a smell that was not unpleasant (Grisham, p. 75)
(21) a box that stood in the kitchen (Goldsmith, p. 126)

In general, the S-RCs found in the sample texts achieved this by providing a description in the restricting clause, either simply to characterise the head NP or to distinguish it from other potential referents. The “distinguishing” function of S-RCs tended to correlate with the definiteness of the head NP, as illustrated below:
(22) *the fellow that had come over*, and seized upon me, told his [story]
(Defoe, p. 296–97)

(23) the hours we pass with happy prospects in view, are more pleasing than *those crowned with fruition* (Goldsmith, p. 50)

(24) a brave smile that was adapted from *the one that was part of her funeral mien* (Barnard, p. 43)

The “distinguishing” S-RCs drawn from the texts also seem to have three main purposes. The first, illustrated in (22), is to reintroduce a previously mentioned referent—one that has been absent from the discourse for a period of time. The second, as shown in (23), is to provide a point of contrast between one NP and another. The third is to restrict a set of possible referents to a single particular member. In (24), for example, the smile referred to by the head NP, *the one*, is not just any smile, but *the one that was part of her funeral mien*.

The “characterising” function tended to occur more frequently in S-RCs with indefinite head NPs. Typically, as in the examples below, the characterisation given in the restricting clause better enables the addressee to picture the referent of the head NP:

(25) a room *paved like the common prison* (Goldsmith, p. 105)
(26) a light rain *that was turning to sleet* (Grisham, p. 56)
(27) a little bundle *wrapped in a white cloth* (Defoe, p. 209)

In many cases, the characterisation need not play any part in the text, other than that of describing the head NP. In (27), for instance, the fact that the bundle is wrapped in a cloth, and that the cloth is white, is of no apparent significance, other than that the description allows the addressee to “see” what the speaker “sees”.

The prevalence of S-RCs with restricting clauses that, in some way, characterise the head NP seems in keeping with the nature of the written medium. In written discourse, unlike conversation for instance, the addressee has no recourse to ask questions, clarify details, or otherwise “actively” interact with the speaker. Therefore, the speaker may use S-RCs to give more information about actions, people, and things so as to minimise potential sources of confusion or to enable the addressee to imagine more clearly the world contained within the discourse.
5.4.2 The A-RCs and DO-RCs

The functions of the A-RCs in the sample texts are varied, but there appear to be three main types. For example, there are those that characterise the head NP in a manner similar to the S-RCs, such as the RCs in (28) and (29):

(28) a mechanic *wearing overalls and grease* rounded the corner and glared at me (Grisham, p. 138)

(29) inhabited by a man *that sold goods for the weavers* (Defoe, p. 299)

The head NPs of “characterising” A-RCs, like those of “characterising” S-RCs, tend to be indefinite. Also like S-RCs, the function of A-RCs, such as those shown above, seems to be to allow the addressee to better picture people and objects existing within the body of the text.

There are also A-RCs in which the restricting clause distinguishes the head NP from other potential referents. For example, in (30), A-RCs are used to distinguish different ice-cream vans from one another, by describing the music each broadcasts:

(30) I hated the one *that played “Greensleeves”* more than the one *that played the Harry Lime Theme* (Barnard, p. 68)

Finally, there are A-RCs in which the direct object in the restricting clause is used to anchor the transitive subject head NP in the text. It is this function that Fox (1987) attributes most strongly to the A-RC. She (1987: 859) claims that the purpose of an A-RC is to link the head NP to the surrounding discourse using a “given” direct object in the RC as a bridge. This is illustrated in the following example from one of the sample texts. The A-RC in (31) enables a change of topic, using the links between a recently mentioned referent that appears as direct object in the restricting clause (*his soutane*) and the head NP (*the breeze*):
I turned and saw Father Battersby. He was standing a little behind me on the lawn, *his black soutane* billowing around his ankles” (Barnard, p. 102)

At this point, although Father Battersby was talking, was most possibly giving me words of advice or remonstration, my attention was drawn back to Castle Walk. *The breeze that had fluttered the hem of his soutane* when we started the conversation had risen to a real wind by now, and real winds make themselves felt on Castle Walk. (Barnard, p. 106)

According to Fox (1987: 859), the “anchoring” function of A-RCs is also common to DO-RCs. In DO-RCs, however, it is the transitive subject in the restricting clause that acts as an anchor. In (33), the head NP (i.e. *a short fine-boned girl*) is anchored in the text by the transitive subject within the DO-RC (i.e. *he*), which refers to a previously mentioned referent (i.e. *a thin, smiling middle-aged man*):

Yet despite their common function, and despite the high ranking of subjects on the AH, there were fewer A-RCs in the text than there were DO-RCs. Fox (1987: 858) suggests that the difference in the frequency of A-RCs and DO-RCs in discourse is related to the quality of the potential anchor within the restricting clause. Her findings indicate that DO-RCs are preferred over A-RCs because the transitive subject within the DO-RC tends to be pronominal and, therefore, a good anchor. The direct object in an A-RC, in contrast, tends to be a full NP and, therefore, not a good anchor.

To test whether the low frequency of A-RCs in this study correlates with the possibility of whether the direct object within the RC is a pronoun or a full NP, a count was made of the numbers of definite, pronominal and full NP “potential anchors” in both A-RCs and DO-RCs. The results indicate that both the direct objects in A-RCs and the transitive subjects in DO-RCs tend to be definite, although that tendency is stronger in the latter: 67% of eighteenth-century and 62% of twentieth-century A-RCs have definite direct objects in their restricting clauses. By contrast, 98% of eighteenth-century DO-RCs and 92% of twentieth-century DO-RCs have definite transitive subjects in their restricting clauses. The results also reveal that the transitive subjects in DO-RCs are typically, not only definite, but also pronominal (84% in the eighteenth century and 82% in the twentieth century). Among the direct objects in A-RCs, in contrast,
only 38% in the eighteenth century and 9% in the twentieth century are pronominal. The findings of this count, then, tend to agree with Fox’s (1987) findings. The higher preference for DO-RCs, rather than A-RCs, seems related to the “other NP” in the restricting clause being pronominal and, therefore, better able to act as an anchor.

It is also interesting that A-RCs, like other RCs that appear infrequently in the sample texts—namely GEN- and IO-RCs—tend to be formed on grammatical relations that prefer human referents. High “animacy” correlates strongly with high topicality and, hence, with definiteness and a tendency towards pronominalisation. Human referents, which are highly “animate,” tend, therefore, to be highly topical and are more likely to be definite or pronominal. Although this makes human NPs preferred anchors in transitive restricting clauses, it seems that this same quality makes them least preferred as head NPs of RCs.

5.4.3 The OBL-RCs

OBL-RCs make up the third highest proportion of RCs in both the eighteenth- and twentieth-century counts. It should, however, be noted that the difference in the percentages of twentieth-century A- and OBL-relatives is not large at 3.3%.

The oblique functions of the head NP vary, but the majority of OBL-RCs express something about location or time (56% in the eighteenth century and 57% in the twentieth century), for example:

(33) the Cave where I had lodged my Provisions (Swift, p. 130)
(34) the very moments while I was calling (Defoe, p. 297)
(35) the warehouse where the eviction took place (Grisham, p. 79)

This suggests that a common function of OBL-RCs is to set the scene. As discussed earlier, there is often a high dependency on description in written texts towards that end. Hence, the relatively high percentage of OBL-RCs is possibly related to the fact that the speaker often needs to refer back to elements of location and time so that the addressee does not lose track of where or when events are taking place. Moreover, the restricting clause following the oblique head NP often not only describes the setting, but also implies why the head NP has been included within the text. For example, in (36), the restricting clause in question follows a discussion between the speaker and another character about a cat:
At no other point in the text is the chair referred to by the RC mentioned: it is relevant and therefore included in the text, only because the cat—the previous topic of conversation—is sitting on it. Therefore, the OBL-RC may be used not only to distinguish or describe, but also to show why the entity it has identified is relevant, or why it has been mentioned in a RC that contains previous topics of discourse or those which will become topics.

The majority of OBL-RCs counted have intransitive restricting clauses (81% in the eighteenth century and 73% in the twentieth century). It is unclear whether this has any significance to the results of this study. What is interesting about the restricting clauses of the OBL-RCs is that the majority of the subjects in them are definite (94% in the eighteenth century and 82% in the twentieth century). Moreover, a large proportion in each century are pronominal (80% in the eighteenth century and 58% in the twentieth century). Based on these results and on the observations discussed above, it can be tentatively suggested that, in a way similar to DO-RCs, the subject within the restricting clause of the OBL-RCs acts as an anchor for the head NP.
5.4.4 The GEN-RCs

Only 1% of RCs in both the eighteenth- and twentieth-century samples were formed on genitive NPs. This is in keeping with their low position on the AH. It is difficult to determine the function that GEN-RCs may have in written English discourse and unwise to guess, as the texts yielded only a small number of tokens on which to base any conclusions. Therefore, no definitive suggestions will be offered here.

5.4.5 The IO-RCs

No IO-RCs were found in the sample texts, even though RCs formed on other lower-ranked grammatical relations, such as obliques and genitives, appear. Given that the indirect object is ranked relatively high on the AH, the absence of RCs formed on indirect objects warrants further investigation. There may be a number of possible reasons for the lack of IO-RCs. Two of the more immediately obvious ones are that indirect objects tend to occur infrequently in discourse and/or that indirect objects are typically pronominal. As already suggested, grammatical relations that tend to be pronominal are generally not as accessible to RC formation as grammatical relations that tend to be full NPs.

To test the hypothesis that the infrequency of IO-RCs is linked to the infrequency of indirect objects in discourse, the numbers of indirect objects were compared to the total number of grammatical relations within each century and clause type. It was found that indirect objects occur very infrequently in the sample texts. In both the eighteenth- and twentieth-century texts, they make up around 2% of main clause grammatical

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6 One of the referees suggests that statistics be provided on how many instances of each grammatical relation occur in the data in order to ascertain whether there is a correlation between the frequency of a given grammatical relation and that of relativisation on that grammatical relation, as has been done in the case of IO. The point is well taken, but, as will be explained below, such a correlation does not seem to be substantiated for SBJ, DO and OBL. For example, in the twentieth century data on main clauses, OBL (n = 808) occurs more frequently than DO (n = 639), but DO-RCs outnumber OBL-RCs, as has been shown. IO, on the other hand, occurs significantly less frequently than the other grammatical relations. For example, in the twentieth century data on main clauses, there are only thirty instances of IO, compared to S (n = 790), A (n = 639), DO (n = 639), OBL (n = 808), and GEN (n = 394). To put it differently, the infrequency of IO is statistically significant enough to have a bearing upon the infrequency of IO-RCs. The same, however, may not be said of the other grammatical relations and their related RCs. This is more or less true of the remaining data.
relations and around 1% of all subordinate clause grammatical relations. The “significance” of this result is most clearly demonstrated by the fact that in eighteenth-century subordinate clauses the percentage of indirect objects is 1.3%, whereas the percentage of intransitive subjects is 21%. Even the second most infrequently occurring grammatical relation, the genitive, is around 10% more frequent than the indirect object. Similar results were obtained from the eighteenth-century main clauses and the twentieth-century main and subordinate clauses. It is likely that this trend is not merely an artifact of the data source but extends, at least, to written texts other than those used in this study. Brown (1983), for instance, finds much the same infrequency of indirect objects in her study of written English third person narrative. This general infrequency appears to be linked to the “limited” function of the indirect object, which is restricted almost exclusively to that of beneficiary/recipient (e.g. Greenbaum 1997, Aarts 1997).

Given that indirect objects occur infrequently in clauses other than the relative clause, the lack of IO-RCs is, perhaps, not particularly surprising. However, it should be noted that the frequency of a grammatical relation in clauses other than RCs does not always reflect exactly how frequently it will be relativised upon. For example, obliques outnumber intransitive subjects in eighteenth-century main and subordinate clauses and in twentieth-century main clauses, but OBL-RCs occur less frequently than S-RCs. In the case of the indirect object, however, the issue of frequency is related to its restricted use, rather than simply to its comparative infrequency.

To test the hypothesis that IO-RCs occur infrequently, because indirect objects tend to be pronominal and, therefore, less likely to be relativised on, the percentages of personal pronouns and full NPs among all grammatical relations were compared. It was found that indirect objects tend to occur more frequently as human pronouns than as something else. The percentages for human pronominal indirect objects are presented in Table 3.
This is in contrast to the obliques and the direct objects, where human personal pronouns are not common, i.e. 6.5% for the obliques, and 16.6% for the direct objects on average. Around 70% of all transitive subjects and genitives—which also occur infrequently as RC heads—appear as personal pronouns. These results thus seem to suggest a link between tendency towards pronominalisation (or high topicality) and lower accessibility to relativisation. This relationship will be addressed more fully in 5.5, but given its potential significance to the present discussion of IO-RCs, the main points will be outlined here.

Kuno (1976: 431) claims that the more likely a grammatical relation is to be interpreted as the theme or topic of a clause, the more accessible it is to relativisation. The results of this study, however, seem to be suggesting the opposite. That is, grammatical relations with a preference for human pronouns (and hence more likely to be interpreted as topics) tend to be relativised less frequently than grammatical relations with a preference for full NPs (and hence less likely to be interpreted as topics). A possible challenge to this hypothesis, however, is that at least half of all main- and subordinate-clause intransitive subjects also appear as personal pronouns. As the results of the counts indicate, the frequency of pronominal intransitive subjects does not seem to affect the chances of the intransitive subject appearing as the head of an RC, although it should be noted that intransitive subjects, unlike transitive subjects, genitives, and indirect objects, also take high percentages of low animacy and full NP referents (Du Bois 1987).

The results of the indirect object counts, then, are somewhat inconclusive. The indications are that both general infrequency and a tendency towards pronominalisation seem to have some influence on how often indirect objects are relativised on. It is quite possible that there are a number of interacting motivations behind the absence of IO-RCs from the text counts.
5.5 Discussion

It is important to reiterate that this study differs from Keenan and Comrie’s (1977) study in one major respect. Whereas Keenan and Comrie’s observations are based on cross-linguistic variation, the observations made in this article are based on the frequency of different RCs in written texts from two periods of a single language. For example, when Keenan and Comrie claim that subjects are more relativisable than direct objects, they mean that there are more languages that can relativise on subjects than those that can relativise on direct objects. The aim of this section is, then, not to compare the findings of this study to Keenan and Comrie’s study per se, but rather to determine the extent to which the AH is reflected in the frequency of RCs bearing different grammatical relations within written English narrative.

For the initial purposes of comparison, it is necessary to combine the totals of A- and S-RCs to reflect the single category of subject that is presented on the AH. In doing so, the following order of frequency (with respect to grammatical relation of head NPs) is revealed:

\[(37) \text{SBJ} > \text{DO} > \text{OBL} > \text{GEN} > \text{IO/OCOMP}\]

An obvious difference between the results of the text counts and the form of the AH is the position of the indirect object. Keenan and Comrie (1977) rank indirect objects above obliques and genitives on the hierarchy, but, in this study, IO-RCs were found to be outnumbered by both DO-RCs and GEN-RCs. As has already been pointed out on more than one occasion, IO-RCs did not appear at all in either the eighteenth- or twentieth-century sample texts.

Unfortunately, this result cannot be directly compared to the results of Keenan’s (1975) study, which does not provide a separate category for IO-RCs. It is interesting that Keenan’s justification for collapsing indirect object and oblique is that these positions behave in the same way with respect to relativisation. It is unclear exactly what Keenan means by this, as he offers no explanation. (It is possible that the two positions are put together under one category in Keenan because indirect object NPs can be marked by the preposition to in English—for example, *Jane gave the book to her granddaughter*—very much like oblique NPs—for example, *Jane travelled to Tokyo last year.*) However, the results of this study seem to suggest that there is little reason, in written English, to collapse the two
positions, not least because there is so substantial a difference in frequency between them.

Notwithstanding the disparity between the infrequency of indirect objects and their position on the hierarchy, the results of this study generally follow the pattern of the AH. It is only when the results are viewed with respect to the distinction between transitive and intransitive subjects that a clearly different pattern emerges. In both the eighteenth- and twentieth-century texts, A-RCs occur less frequently than DO-RCs and OBL-RCs.

As already discussed, Keenan and Comrie (1977) place considerable emphasis on the relativisability of subjects. The first of their hierarchy constraints, for instance, states that all languages must be able to relativise on subjects (Keenan and Comrie 1977: 67). Furthermore, they provide data arising from a number of experiments (for example, Keenan and Hawkins 1987) to support the claim that the subject, out of all grammatical relations, is the most psychologically accessible to relativisation. Therefore, the fact that DO-RCs and OBL-RCs outnumber A-RCs in the text counts poses a challenge to the notion that all subjects are inherently easier to relativise on than other grammatical relations. It also suggests that, for the purposes of relativisation in written English, a unified category of subject is not wholly justified, or, at least, that it is potentially misleading.

As discussed above, the A-RCs were outnumbered, not only by the DO-RCs, but also by the much lower-ranking OBL-RCs. It is possible that this is due, in part, to the kinds of oblique used in this study, as opposed to those used in Keenan and Comrie’s (1977) study (see 5.4.3). Whereas this study included all obliques, Keenan and Comrie (1977: 66) included only those which “express arguments of the main predicate […] rather than ones having a more adverbial function”. It is also possible that the number of OBL-RCs reflects their importance in written texts, as a means of setting the scene. As discussed earlier in this article, the functions of different RCs tend to influence the frequency with which they appear in the text. Given this, and given that the results of the count do not fully match the AH when transitive and intransitive subject are separated, it is likely that there are a number of interacting motivations behind accessibility to relativisation. These may manifest themselves in ways that reflect the AH, but it is more likely that these manifestations represent variations in discourse preference, rather than the primacy of certain grammatical relations.

As has already been alluded to, Fox (1987) suggests that the discourse functions of subjects and objects play an integral role in their accessibility to relativisation. According to her, RCs have two main functions: to
describe an NP and justify its inclusion, or to anchor it to the surrounding discourse. She claims that S-RCs are best suited to the first function and DO-RCs to the second. A-RCs also have an anchoring function, but, unlike DO-RCs, the other NP in their restricting clause tends to be a full NP, rather than a pronoun. Hence, A-RCs occur less frequently in discourse than do DO-RCs, because the potential anchor in an A-RC is not as good as the typically pronominal anchor in a DO-RC.

The results of this study differ in one immediate respect from those of Fox (1987): RCs formed on direct objects do not occur in numbers equal to those formed on intransitive and transitive subjects combined, as in Fox’s results. However, this does not detract from the general similarities between the findings of this study and those of Fox. Perhaps of most significance is the fact that S-RCs and DO-RCs—with no statistical difference between the two—occurred more frequently in both the eighteenth- and twentieth-century sample texts than did A-RCs. This provides some empirical support for the possibility that Fox’s Absolutive Hypothesis is also applicable in written English narrative, as it is in English conversation. Thus, the frequency hierarchy in (37) should be revised to:

\[(38) \ S/DO > OBL > A > GEN > IO/OCOMP\]

The question arises as to whether Fox’s (1987) claims can be extended to cover grammatical relations other than subjects and direct objects. Presumably, if the discourse functions of relative clauses and grammatical relations influence accessibility to relativisation in subjects and direct objects, they must also influence the accessibility of other grammatical relations (for such a suggestion, see Song 2001: 241). The results of this study provide some indications that the analysis suggested by Fox (1987) could be applied to obliques, indirect objects, and genitives. For instance, Fox suggests, based on the results of her own study and on the work of Du Bois (1987), that preferences for the distribution of given and new information in discourse tend to correlate strongly with accessibility to relativisation. Specifically, those grammatical relations that tend to bear given information/pronouns are less frequently relativised on than those that tend to bear new information/full NPs. As found in this study, and supported in part by Du Bois’s findings, obliques tend to appear as full NPs, whereas indirect objects and genitives tend to appear as pronouns. If the suggestions made above are to be borne out, OBL-RCs should occur more frequently in the texts than both IO- and GEN-RCs. As the results
indicate, OBL-RCs indeed occur more frequently than GEN-RCs and IO-RCs.

There were insufficient numbers of GEN-RCs and IO-RCs to enable their discourse functions to be determined. However, the numbers of OBL-RCs lend themselves to the tentative suggestion that OBL-RCs, like DO-RCs, may rely on anchors. This is supported, to an extent, by the fact that the other NP in the OBL-RCs in this study tended to be pronominal. However, unlike DO-RCs, the head NPs in OBL-RCs tend not to be continuing topics of discourse. Therefore, it is likely that any anchor in an OBL-RC would be used, not to introduce a new topic, but rather to signal the relevance to the surrounding discourse of the OBL-RC head NP.

In summary, the results of this study suggest that the claims made by Fox (1987), concerning discourse preferences and accessibility to relativisation, may be applicable, not only to intransitive subjects, transitive subjects, and direct objects, but also to obliques, genitives, and indirect objects.

6. Conclusion

This study had three aims: (i) to examine the link between accessibility to relativisation and grammatical relation; (ii) to test whether the patterns of relativisation, as discovered by Keenan and Comrie (1977) on a cross-linguistic basis, are the same in the eighteenth century as they are in the twentieth century; and (iii) to compare the findings of the counts with the findings of Keenan and Comrie (1977), Keenan (1975), and Fox (1987).

It was found that the patterns of relativisation differ very little between the eighteenth and twentieth centuries. Any variations that occur tend to be minor. For example, although there were differences in the relative frequencies of S-RCs and DO-RCs, and in the size of the gap between the A- and OBL-RCs, these involved margins of only a few percent. In general, the tendency in both the eighteenth and twentieth centuries is towards a preference for S- and DO-RCs, followed, in decreasing order of frequency, by the OBL-RCs, A-RCs, and GEN-RCs, with IO-RCs and OCOMP-RCs completely unattested in the counts.

When subject is presented as a unified category, the patterns of frequency mirror the ranking of grammatical relations on the AH, with the exception of the IO-relatives. However, when the subject category is divided into intransitive and transitive subject, the results tend to offer more support for Fox’s (1987) reinterpretation of subject, rather than the
AH. In particular, Fox points out that S- and DO-RCs occur more frequently than A-RCs. This is indeed borne out by the results of this study. Moreover, both the lower ranked DO-RCs and OBL-RCs occur more frequently than A-RCs. It has been suggested that written narrative requires a considerable amount of description in order to indicate the states of people or other entities, or to set the scene. The frequency of S- and OBL-RCs seems to fall out directly from this requirement. The frequency of DO-RCs seems to follow from Fox’s (1987) suggestion that one of the main functions of RCs is to anchor the head NP in discourse. Certainly, the results show that the other NP in a DO-RC tends to be pronominal and, therefore, a good anchor. Preferences for pronouns as opposed to full NPs seem to have a strong bearing on whether certain grammatical relations are relativised on as frequently as others. All of the infrequently occurring RCs in this study, the A-, GEN-, and IO-RCs, tend to be formed on grammatical relations that typically occur in pronominal form. In contrast, the more frequently occurring RCs, that is, the S-, DO-, and OBL-RCs, tend to be formed on grammatical relations that typically occur as full NPs. This makes much sense. If an NP is pronominal, it is most likely a recent or current topic. As such, the functions of RCs, whether to distinguish, describe, or anchor, become largely irrelevant. The speaker, in using a pronominal form, assumes that the addressee can identify the referent in question, hence there is no need for description. Moreover, current topics of discourse do not need to be anchored—they are already present in the text, and their relevance has already been established.

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The Finnish Colorative Construction and Expressivity

Abstract

This paper examines the Finnish verbal expression called the colorative construction (CC). In the CC there are two verbs: a neutral infinitive verb and a finite verb which dramatizes or specifies the denotative meaning. The construction fulfils stylistic and aesthetic functions. Syntactically the CC is not fundamentally different from other infinitive clause types, but certain pragmatic restrictions regulate its usage. The difference between finite verbs in the CC and in other infinitive clauses is particularly important. While, to some extent, finite verbs in the CC fit into theories of descriptive words or ideophones in different languages, not all of them are indisputably ideophones. Nevertheless, they all have potential for expressivity, which is further emphasized by the syntactic construction. However, syntax alone cannot uphold that expressivity, since the CC cannot be formed with any verb. Rather, syntax and semantics are in close interaction, together reinforcing the expressivity of the construction.

1. Introduction

“The people on the bus go up and down, up and down, up and down. The people on the bus go up and down all through the town.”

“Ihmiset ajella hytkytti, hytkytti, hytkytti. Ihmiset ajella hytkytti koko päivän.”

In this paper we aim to examine the Finnish verb phrase type called colorative construction (CC). The Finnish equivalent for the term (koloratiivinen konstruktio) was established by Ahti Rytkönen (1937). The

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1 Pseudonym J.S., an early childhood pedagogue, translated the popular English children’s rhyme “The Wheels of the Bus” and taught it on a music course at Orivesi Folk High School in the 1980s (Perkiö and Huovi 2006: 139).

2 We would like to thank the anonymous referees of the SKY Journal of Linguistics for their invaluable comments on a previous draft of this article. The writers alone remain responsible for any remaining shortcomings, omissions or errors. Special thanks are due to Eleanor Underwood (Department of Languages, University of Jyväskylä) for help in checking the language.
corpus used in this paper is taken from the Finnish Syntax Archive at the University of Turku, which was collected from Finnish spoken dialects (see section 3). As the word ‘colorative’ suggests, the CC not only has a denotative meaning, but also a special descriptive or expressive force. Grammatically, the CC is parallel to other infinitive clauses, but the semantic relation between its non-finite and its finite verb is, rather, more typical of adverbial clauses. It has also been compared with serial verb constructions. Furthermore, finite verbs in the CC have certain features characteristic of ‘descriptive’ words or ‘ideophones’ (see Rytkönen 1937: 103; Jarva 2003: 76–77); in this paper, the term ‘ideophone’ is used. We shall suggest that the syntactic, pragmatic and semantic factors are concurrent and that they reinforce the expressive force of the CC. By deploying the CC, a speaker can dramatize and simulate actions, while the construction also fulfils stylistic and aesthetic functions. This is seen in the Finnish translation above, where the colorative construction *ihmiset ajella hytkytti* creates an image of people shaking and bouncing up and down on the bus.

The aims of this article are 1) to examine the different factors which affect this expressive force and 2) to define the relationship between the CC, other infinitive clauses and serial verb constructions. The structure of this paper is as follows: Section 2 introduces the typical features of the CC in general and compares them with the concept of serial verb construction. Section 3 gives an overview of the corpus. In section 4 the CC is compared with other infinitive clauses, and word order and cohesion are discussed as possible criteria for classification. Pragmatic restrictions connected with tense, person, and mood, as well as with negation and interrogation, are discussed in section 5. Semantic analysis follows in section 6, which focuses on three components of the CC: neutral verbs, subjects, and colorative verbs. In the concluding section 7 the CC is compared with other syntactical constructions in which ideophones are used in different languages. Finally, we attempt to sketch out some factors which may explain how the CC has developed.

2. The colorative construction and serial verb constructions

In the CC there are two verbs: a non-finite and a finite verb. Of the four Finnish infinitives, only one can be used in the CC. This infinitive is also the dictionary form of the verb, and it is called the First Infinitive (e.g. Karlsson 1987: 53–55, 156), or the *A* infinitive (ISK 2004: 490). In this
paper, the latter term is used. The capital letter A stands for the infinitive suffixes -a and -ä; the choice is dictated by vowel harmony, as in kaatu-a ‘to fall’ and yrittä-ä ‘to try.’ In the CC the infinitive is a relatively neutral verb with a denotative meaning and usually a fairly close semantic equivalent in English; see koatuat ‘to fall’ in example (1).

The finite verb in the CC dramatizes or specifies the denotative meaning of the infinitive. We shall here call it the colorative verb. The expressivity of colorative verbs is not unlike that of ideophones. For example, Voeltz and Kilian-Hatz (2001: 3) point out that “[I]deophones and similar words have a special dramaturgic function… [they] simulate an event, an emotion, a perception through language.” Colorative verbs are highly context-specific, and particularly difficult, if not impossible, to translate literally into other languages; the same holds true for ideophones (c.f. Msimang and Poulos 2001: 235; Watson 2001: 394; Jarva 2003: 75–76). Thus, colorative verbs are just marked with col in our glosses and -COL in the English translations below. In example (1) tupsahi is a colorative verb which might evoke a slightly humorous impression of the speaker tumbling deep in the snow, softly, unexpectedly and suddenly, perhaps with a faint sound.

(1) mie sinnel lumee koatuat tupsahi (LA, Mikkeli)³
    I there snow-ILL fall-INF COL-PAST-1SG
    ‘I fell-COL in the snow’

The construction with an infinitive has no known equivalents in Indo-European languages or even Finno-Ugric languages, except for Balto-Finnic languages, which are closely related to Finnish, such as Estonian (EKG 1993: 246) and Veps (Kettunen 1943: 153–160). However, the CC also has a variant where both verbs are in the finite form (called here a “two-finite variant,” whereas the variant with an infinitive is called an “infinitive variant”). It can be illustrated by modifying the first example:

³ The corpus examples are dialectal and may differ considerably from written Standard Finnish; in Standard Finnish example (1) would be, minä sinne lumeen kaatua tupsahdin. The corpus examples are referred to with the abbreviation LA (= Lauseopin arkisto, Syntax Archive) and the name of the village where the example was recorded. All the examples without references are invented or constructed by the authors.
The two-finite variant has equivalents also in Sami languages and Hungarian (see Ojutkangas 1998: 116). In the literature the infinitive and two-finite variants of CC are usually introduced together (e.g. ISK 2004: 443). According to Ojutkangas (1998: 117), it is “unnecessary” from a semantic point of view to differentiate between them, and “in principle” both verbs in the CC could be in the finite form; Rytkönen called these two variants “completely synonymous” (1937: 102). The two-finite variant is also acceptable in the standard language. However, this study focuses on the infinitive variant, because there are no examples of the two-finite variant in our corpus.

It is hard to find in English, at least in its best-known (“standard”) variants, verb phrases syntactically equivalent to the colorative construction. However, similar ideas and connotations can certainly be expressed by other means in English; for example, verb phrase + adverb phrase, verb phrase + prepositional phrase, phrasal verbs, prepositional verbs, idioms, etc. (see also our suggested translations of the examples). Anttila (1977: 30) gives English translations for some CC’s, e.g. laulaa hoilottaa ‘sing loudly and ungracefully,’ veistää nutustaa ‘carve ahead slowly and gradually;’ there are also two English translations in Jarva (2003: 166): juosta jolkottaa ‘to run slowly, at a jog-trot’ and tulla kempuroida ‘to come limping, with stiff legs.’

There seems to be a contradiction between syntax and semantics, as syntactically the finite verb functions as the predicatror, but in the CC the finite verb is the colorative one, functioning semantically rather like an adverb phrase for a neutral verb. It is not surprising, therefore, that syntactically the CC has been interpreted in different ways. Anttila (1977: 30) calls infinitives “object verbs.” In this he follows the traditional explanation that an A infinitive is either the subject or the object of a finite main verb. Ambiguously, Anttila calls colorative verbs “adverbial auxiliaries;” thus, he leaves unclear which verb is the predicataor. In the Finnish Syntax Archive at the University of Turku (Lauseopin arkisto), from which our corpus is collected, A infinitives are coded as adverbials of colorative verbs. Also the most recent Finnish grammar (ISK 2004: 443) regards the colorative verb as the main verb, although in the CC there is a “multi-verb predicator.” Hakulinen and Karlsson (1979: 234), however,
regard the infinitive in the CC as the main verb “defined” by the colorative verb.

In her study of asyndetic verbal expressions in Finno-Ugric languages, Ojutkangas (1998: 115–117) regards the CC as a serial verb, or “serial verb-like,” construction. Serial verb constructions are known in many languages, especially in Australia, South-West Asia and Africa; best-known examples are from Kalam and Yoruba (see Foley and Olson 1985, Givón 1991, Itkonen 1997). There are several definitions of a serial verb construction; in general it can be stated that it comprises two or more verbs which are “merely juxtaposed, with no intervening conjunctions” (Foley and Olson 1985: 18). Typically verbs in such a construction share a subject and other core arguments, and they tend to be in the same tense and mood (Foley and Olson 1985: 22–25). The verbs can also function independently as the predicator of a simple clause, and they retain their lexical meaning when serialized (Itkonen 1997: 235–236). However, it is not possible to define a separate meaning for any of the single verbs in a serial verb construction; as Givón (1991: 81, 84; see also Ojutkangas 1998: 110) puts it, the construction codes “a simple single event,” or “an event/state that one language codes with a simple clause with a simple verb.”

The two-finite variant of the CC (kaaduin tupsahdin) meets the definitions above quite well: the verbs are both in the same tense and mood, and they have the same subject. Moreover, they quite clearly code a single event (cf. Ojutkangas 1998: 114). (Nonetheless, there are certain problems in defining a “single event,” see Givón 1991: 84.) As mentioned above, such parallel ideas are usually expressed with one (sometimes phrasal) verb in English. It is also possible that a colorative verb functions as a predicator in a simple clause. In many cases, however, they are so context-specific that it is questionable if they have any “lexical” meaning at all. For example, if the neutral verb is omitted in example (1), the result is grammatically correct but the meaning becomes rather unclear and almost impossible to translate—even when it can be deduced from the context:

(3) minä sinne lumeen tupsahdin  
I there snow-ILL COL-PAST-1SG  
‘I ???-ED in the snow’

In any case, some colorative verbs can be used elsewhere than in a CC without difficulty. They stand alone without another, more neutral verb, and their meaning is rather stable, although they usually have an expressive
function. However, the CC enhances their expressivity, and the neutral verb in the CC modifies their meaning. The problematics of the independent meaning of colorative verbs are further discussed in section 6.2.

Although in the two-finite variant of CC both verbs have the same tense and mood, the non-finite variant does not meet the criteria of a typical serial verb construction. The question of common arguments is also problematic to some extent, even if the A infinitive and the finite verb share the same subject (ISK 2004: 497–498); this interpretation is plausible as long as there is only one subject in the clause. But if the A infinitive is regarded as the object for the finite verb, any other object or adverbial should be regarded as an argument for that A infinitive, not for the finite verb. Ojutkangas (1998: 117) evades the problem by stating that there is no semantic difference between the two-finite and non-finite variants of the CC. This broad generalization is acceptable in her study, since she examines several asyndetic verbal expressions in many different Finno-Ugric languages. In this study, however, we shall not combine the two variants of the CC, because the two-finite variant is marginal in the corpus used.

Apart from the usage of the infinitive, there is a bigger difference between the function of the CC and that of serial verbal constructions. Ojutkangas (1998: 116) states that in the CC, verb serialization is deployed to specify meaning. This does not fit with the most common functions of serial verb constructions introduced by Givón (1991: 82–83): these are case-role marking, verb co-lexicalization, deictic-directional marking, tense-aspect marking, and evidentiality and epistemic marking. There is no colorative or expressive, and not even a specifying function in Givón’s typology. In some cases, the CC could be approximated with verb co-lexicalization, when “two or more verb-stems are co-lexicalized to create a more complex verbal concept” (Givón 1991: 82). In example (4), it could be said that the CC creates “a more complex verbal concept,” something translatable as ‘eat a lot, eat greedily, avidly.’

(4) siellä sitä sitte syyväm mekotettiin (LA, Multia)
    there    PRT then eat-INF   COL-PAST-PASS
    ‘then we were eating-COL there [= at hay making]’

But there is still a substantial difference between this kind of expressive verbal concept and those mentioned by Givón, as in the following example:
(5) *she eat-perceive the meat* (Givón 1991: 82)

‘she tasted the meat’

Thus, in conclusion it must be said that the CC differs quite remarkably from typical serial verb constructions. It is true that the verbs share their core arguments in the CC, as they typically also do in a serial verb construction. However, the CC can also be compared with other infinitive clauses, where an infinitive could be regarded as the complement of a finite verb (see section 4). If this is the case, it cannot be said that the verbs share, for example, an object. In terms of clausehood, the CC does not differ from other infinitive clauses, whilst serial verb constructions are rather exceptional intermediate forms between simple and compound clauses. The functions of typical serial verb constructions and the CC are essentially different. In this respect, the CC has much more in common with adverbial clauses. Interestingly, in many languages around the world, ideophones are quite commonly regarded as adverbs (e.g. de Jong 2001: 130; Nuckolss 2001: 274–275; Schaefer 2001).

3. **The corpus**

The corpus of this paper is collected from the Finnish Syntax Archive at the University of Turku (Lauseopin arkisto). The archive is coded morphologically and syntactically, and it constitutes an XML database, in which specific sets of data can be searched by xpath 1.0 expressions. It has in total 132 samples of spoken Finnish dialects from different villages, each sample comprising 6000–8000 words of text (approximately one hour in speech). The samples represent the variety of Finnish dialects reasonably well: there are samples from 15 to 30 villages from every main dialect area. The number of informants is 153 (77 women and 76 men). Since the informants are supposed to be speakers of ‘genuine’ Finnish dialects, old people were preferred by the compilers. Most (96%) of the informants were born in the late nineteenth century (from the 1870s to the 1890s), and they were typically in their eighties or nineties when recorded. The recordings were mainly done in the 1960s. (See Lauseopin arkisto for further details in Finnish.)

The informants were interviewed by a researcher asking questions such as “how did you thresh the corn in the old days” or “tell everything about wolf hunting.” The most common register is therefore narration in
the past tense. Fluent and talkative informants were preferred by the
compilers. In a few cases two dialect speakers converse with each other.

It was not easy to gather all the colorative constructions of this huge
archive, because they are not coded separately. Their A infinitive is coded
as an adverbial, but so are A infinitives in some other verbal expressions
and in incomplete or misconstrued clauses, too. When all sentences with an
A infinitive coded as an adverbial were searched for, 277 hits were
obtained. From this raw data all the CC’s were separated manually. In the
final corpus there are 85 colorative constructions from 40 samples. Word
order in the CC can vary in different dialects, as in example (6), although
the order finite + infinitive is not possible in Standard Finnish. In the
corpus, 20% of the examples (17/85) are of this type.

(6)  susi  lotkotti  mennä  erellä (LA, Renko)
    wolf  COL-PAST-3SG  go-INF  ahead

‘the wolf went-COL ahead’

In order to find two-finite variants of the CC (cf. example (2)), all clauses
with two finite verbs were searched for. Quite surprisingly, no CC’s were
found in the search; in most of the hits the same verb was uttered twice in
emphatic or fragmentary clauses. Thus, there are no two-finite variants in
the corpus. This does not mean that the two-finite variant does not exist in
Finnish dialects as there are several plausible mentions of it in the literature
(see examples in Jarva 2003: 77). Either the two-finite variant is so infre-
quent that there are no examples of it in LA, or the different search criteria
used just did not match the codification of the LA. It is possible that two-
finite variants of the CC are interpreted as consisting of two clauses, as the
main principle in the coding process was that “in general, there is one finite
predicator in every clause” (Ikola et al. 1989: 27).

The corpus in this study is slightly smaller than in Ikola et al. (1989:
303–308), who claim that there are 90 CC’s in the archive. The difference
can be explained by different search criteria, and perhaps also by our more
critical elimination of false or questionable hits. Unlike the entire archive,
our reduced corpus does not represent all Finnish dialects equally. The CC
appears to be most common in Eastern and Central Finland and to occur
rarely in Southern Finland and Lapland. (See the map in Ikola et al. 1989:

4 We would like to thank the staff of the Lauseopin Arkisto for their help; special thanks
go to trainee Katariina Jalonen and special researcher Nobufumi Inaba.
In most samples there are just one or two hits, but one sample has no less than nine. That sample is from Nilsiä, in Eastern Finland about 50 kilometres north-east of the city of Kuopio. The dialects of that area are reported to be rich in ideophones (see e.g. Anttila 1977: 30; Jarva 2003: 76).

Of course, the distribution of the hits is also dependent on the speakers’ stylistic repertoires and attitudes; as Ikola et al. put it (1989: 305), the speaker using the CC “has apparently moved into a somewhat more casual style of narration.” Similarly, Kilian-Hatz (2001: 156) claims that “ideophones are part of an informal language register, and their function is to dramatize a narration.” Presumably the interview situation, more or less formal, sets constraints to both the frequency and variation of the CC. Therefore, we included in this study also Luttinen’s (2000) corpus of more than 80 examples of the CC from free speech collected for her MA thesis.

4. **CC and other infinitive clauses**

An infinitive and a finite verb occur together in many Finnish sentences, not only in the CC. Hereafter we call them simply “other infinitive clauses,” although the term is slightly inaccurate. Firstly, an A infinitive (or an infinitive phrase) can be seen as the complement of a finite main verb; particularly an object. Secondly, an A infinitive and a finite verb can form a verb chain.

So, in the following example, the infinitive phrase [opiskella saksaa] ‘to study German’ is the object for the finite verb haluaisin ‘I would like.’

(7) \[ \text{minä haluaisin opiskella saksaa} \]

\[ \text{I want-COND-1SG study-INF German-PART} \]

‘I would like to study German’

There is a multitude of Finnish verbs with A infinitive as their complement, e.g. *jaksaa* ‘can, be able, bother,’ *muistaa* ‘remember,’ *osata* ‘can, be able, know how,’ *uskaltaa* ‘dare,’ *viitsiä* ‘bother’ and *yritää* ‘try’ (Vilkuna 1996: 267). Their English equivalents are usually followed by the infinitive marker *to* and infinitive, except for auxiliaries (e.g. *can, may*). However, English makes use of the marker *to* also in sentences where Finnish prefers another infinitive or a nominal phrase, e.g. the MA infinitive phrase *opiskeleMAan saksaa* ‘to study German’ in the following example (ISK...
2004: 491-492; cf. 3rd infinitive; Karlsson 1987: 160–163). In Finnish, MA infinitive phrases like this are not considered objects, but adverbials.

(8) \( \text{minä jouduin opiskelemaan saksaa} \)

I have-to-PAST-1SG study-MAINF German-PART

‘I had to study German’

The most recent Finnish grammar (ISK 2004: 493–495) distinguishes between verbs with an A infinitive as their complement and verbs forming a verb chain with an A infinitive. In the latter group there are “modal or other abstract” verbs such as \( \text{alkaa} \) ‘begin, start,’ \( \text{meinata} \) ‘mean, intend; tend,’ \( \text{saada} \) ‘can, may, be allowed,’ \( \text{tahtoa} \) ‘want; tend,’ \( \text{taitaa} \) ‘seem; think; be going’ and \( \text{voida} \) ‘can, be able.’ In Finnish dialects the most frequent verbs occurring with an A infinitive are from this group (see the statistics in Ikola et al. 1989: 286). They are, to some extent, parallel to the English modal auxiliaries \( \text{can, may} \), etc. Thus, in the next example the finite verb and the infinitive belong to the same verb chain [\( \text{voisin opiskella} \) ‘I could study,’ which is the predicator, and \( \text{saksaa} \) ‘German’ is its object.

(9) \( \text{minä voisin opiskella saksaa} \)

I can-COND-1SG study-INF German-PART

‘I could study German’

The question is: is it then possible to distinguish the CC formally from other infinitive clauses, or should an A infinitive in a CC be interpreted as the complement of a main verb, or as a part of the verb chain just as in examples (7) and (9)? According to ISK (2004: 442–443), verb chains and the CC are different constructions, albeit similar in the sense that both have a predicator that consists of two or more verbs. However, the grammar does not state explicitly how to formally distinguish these two. Here we will look more closely at two possible criteria: word order and cohesion.

4.1 Word order

At first glance, word order seems to be different in the CC from other combinations of A infinitive and finite verb. In a typical CC, the infinitive goes before the finite verb (10), whereas in other infinitive clauses it
typically follows the finite verb (11). “The order is thus OV vs. the VO normal in the rest of Finnish syntax” (Anttila 1977: 30).

(10) \( \text{minä männäh hilasin seq oja ylite (LA, Rautalampi)} \)
    I go-INF COL-PAST-1SG that-GEN ditch-GEN across
    ‘I went-COL across that ditch’

(11) \( \text{minä tahdoin mennä sen ojan ylitse} \)
    I want-PAST-1SG go-INF that-GEN ditch-GEN across
    ‘I wanted to go across that ditch’

However, this is not an absolute criterion, because word order in Finnish is grammatically free, but textually conditioned; Vilkuna (1989: 9) calls it “discourse-conditioned.” Accordingly, when analyzing separate clauses it is very often possible to imagine some context in which a particular word order would be acceptable. Since Finnish is principally an SVO language, the word order finite + infinitive can be seen as neutral or unmarked. However, it is not difficult to find clauses where the verbs are in the opposite order, i.e. an infinitive coming before a finite verb; see the following examples (12) and (13):

(12) \( \text{pakastaa voi kaikkia marjoja (Vilkuna 1989: 136, 241)} \)
    freeze-INF can-3SG all-PL-PART berry-PL-PART
    ‘you can freeze all kinds of berries’

(13) \( \text{e kylä lainka mens saa (LA, Karjala Tl)} \)
    no place-to-visit-ILL at-all go-INF may-3SG
    ‘you are not allowed at all to go for a visit’

As mentioned above (see example (6)), the word order in the CC can vary, and 20% of the examples in the corpus have the order finite + infinitive. In such cases the word order is similar in the CC and other infinitive clauses:

(6’) \( \text{susi lotkotti mennä erellä (LA, Renko)} \)
    ‘the wolf went-COL ahead’

(11’) \( \text{minä tahdoin mennä sen ojan ylitse} \)
    ‘I wanted to go across that ditch’
Thus, even if the word order of a typical CC distinguishes it from other infinitive clauses, exceptions are so frequent that word order cannot be held as an absolute criterion.

### 4.2 Cohesion and complements

A possibly more significant difference is the cohesion of the CC; i.e. in Standard Finnish it is impossible to put any constituent between the verbs (ISK 2004: 443). So, in example (1) *minä sinne lumeen kaatua tupsahdin* there are three constituents: the pronoun *minä* ‘I,’ the adverbial/noun phrase *sinne lumeen* ‘in the snow,’ and the colorative construction *kaatua tupsahdin*. The order of the constituents could vary to some extent. While the relatively cohesive phrase *sinne lumeen* can be split (*sinne minä kaatua tupsahdin lumeen*), the CC cannot: *minä kaatua sinne lumeen tupsahdin* is not grammatical. With other infinitive clauses the split is possible, even frequent:

(14) *jos hää tahto meitä auttaa* (LA, Koivisto)
    ‘if she wanted to help us’

(15) *kyl mää ny lukkees sentään tavalisest ossaa* (LA, Koski Tl)
    ‘well, at least I can read normally’

In compound tenses (perfect and pluperfect, see e.g. Karlsson 1987: 133–137; ISK 1994: 139–140) an auxiliary (*olla* ‘to be, to have’) prototypically occurs immediately before the other verbs of the CC (cf. example (16)).

(16) *se oli nukkuak kahottanus sitte se munmu* (LA, Haapajärvi)
    ‘then the old lady had slept’ (LA, Haapajärvi)

There may be some constituents between the auxiliary and the other verbs, as *sillonki vähä* ‘then a little’ in the following example (17):

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5 It is a matter of taste whether one regards *sinne* ‘there’ as the head of an adverb phrase, or *lumeen* ‘in the snow’ as the head of a noun phrase. In any case, *sinne lumeen* ‘there in the snow’ constitutes a relatively cohesive phrase that expresses direction.
(17) se ol sillonki vähä suuttuva tuhahtana
he have-PAST-3SG then-AFFX a-little get-angry-INF COL-PTCP
‘he had got a little angry-COL then, too’ (LA, Laukaa)

However, an auxiliary cannot come between an infinitive and a finite verb in the CC; it is not grammatical to say, for instance, *se nukkua oli kahottanut. Nevertheless, a parallel word order is acceptable in other infinitive clauses:

(18) jos vaan olis savunkiv vetänyn niin kyllä
if only have-COND-3SG smoke-GEN-AFFX inhale-PTCP so PRT
jatkaa olis täytyny (LA, Kuru)
continue-INF have-COND-3SG have-to-PTCP

‘if you had taken just one puff, you would have had to continue [smoking] for sure’

The continuity of the CC seems to be obligatory in Standard Finnish and also in the dialects as long as the word order is infinitive + finite verb. However, when a finite verb precedes an infinitive, the CC can be split. In the following example (19) the object ne laovat ‘the boards’ comes between the verbs. The CC with this “inverted” word order appears to be significantly less coherent, as there is some kind of constituent between the verbs in as many as 7 cases out of 17.

(19) nythän ne konneet ... hylykyttellöö ne laovat tehä
now-AFFX these machine-PL COL-3SG these board-PL make-INF
‘now(adays) the boards are made-COL by them machines’ (LA, Nilsiä)

The cohesion of the CC, i.e. the firm connection between the verbs, apparently prevents it from having any infinitive complements itself. There are no examples in our corpus, although there are some verbs in the CC’s that could otherwise have one. Interestingly, they could only have an MA infinitive as a complement; there are no neutral verbs in the corpus that could have an A infinitive as a complement. In example (11’) the verb mennä ‘to go’ has a postpositional phrase as a complement [sen ojan ylitse] ‘over the ditch,’ but it could also have an MA infinitive as a complement: [kävelemään] from the verb kävellä ‘to walk.’
(11’) *minä tahdoin mennä sen ojan ylitse*
   ‘I wanted to go over the ditch’

(20) *minä tahdoin mennä kävelemään*
   I want-PAST-1SG go-INF walk-MAINF-ILL
   ‘I wanted to go for a walk’

The CC can also have a postpositional phrase as a complement (10’), but it appears to reject an infinitive in a similar position (21):

(10’) *minä männäh hilasin seq oja ylite*
   I go-INF COL-PAST-1SG that-GEN ditch-GEN across
   ‘I went-COL across that ditch’ (LA, Rautalampi)

(21) *?minä mennä hilasin kävelemään*
   I go-INF COL-PAST-1SG walk-MAINF-ILL
   ‘I went-COL for a walk’

Example (21) might be questionable due to the word order, because the main verb *hilasin* would split an infinitive phrase [*mennä kävelemään*] in two. However, also the CC’s with inverted word order seem to reject infinitive complements; thus, the word order is not a sufficient explanation. Furthermore, the CC may easily have other phrases as complements: only infinitive complements are rejected. Conceivably this is due to pragmatic, not syntactic reasons. It is possible that the CC and infinitive complement are just too solid to have common members: the verb *mennä* cannot adhere both to the CC [*mennä hilasin*] and to the infinitive phrase [*mennä kävelemään*] within one clause.

The CC may also function as an infinitive complement itself. In the following example (22) the CC [*laokata rehnimään*] is an adverbial, and the colorative verb is in the MA infinitive because of the valency of the predicator *lähteny* (from *lähteä* ‘go away’).

(22) *se teiltä ol lähteny laokata rehnimään*
   it from-here have-PAST-3SG go-away-PTCP gallop-INF COL-MAINF-ILL
   ‘it [the horse] had left galloping-COL away from here’

Altogether, cohesion appears to distinguish the CC from other infinitive clauses more definitely than word order does. This reflects the fact that in the CC the verbs are more firmly connected, which makes the construction resistant to splitting and infinitive complements. The variants with an
infinitive preceding a finite verb are less cohesive, since they may be split; however, even they do not have infinitive complements. One must be cautious with negative conclusions, because our corpus does not necessarily reflect all the possible ways in which the CC could be used. It is remarkable, however, that Luttinen’s examples collected from free speech are very much like our corpus, also with respect to their word order and cohesion. She, too, has no examples of any CC with an infinitive complement.

Nevertheless, even cohesion does not separate the CC rigorously from other infinitive clauses. There are no absolute syntactical criteria; therefore, the final difference can only be made with the help of semantics. The difference between CC and other infinitive clauses is virtually indisputable; colorative verbs are fundamentally different from any verb with an A infinitive as a complement or forming a verb chain with an A infinitive. The semantics of colorative verbs will be discussed further in section 6.2. Interestingly, even the semantic criteria are not sufficient in some cases (note the ambivalent verb *puohata* in the end of section 6.2).

### 5. Pragmatic restrictions

In the CC the colorative finite verb has normal personal and temporal endings, just like a simple predicator in any Finnish sentence. Technically, it should be possible to use the CC in any tense, person or mood, also in negative and interrogative sentences, following Finnish grammar. However, there seem to be pragmatic restrictions or at least restrictive tendencies regulating how the CC can be used. This is interesting if we consider the fact that ideophones are pragmatically restricted in many languages. They typically occur in declarative sentences and are uncommon in questions or negative sentences (Childs 1994: 188; Alpher 2001: 11). It has been reported that in some languages they are never negated (e.g. Kilian-Hatz 2001: 158; Klamer 2001: 168). In this section we will describe pragmatic restrictions connected with tense, person, and mood, and finally present some suggestions about negation and interrogation.

In most examples (74 of 85) in the corpus the colorative verb is conjugated and expresses tense, person and mood. In the remaining eleven cases the CC has a syntactic role that requires both verbs to be in the non-finite form (see example (22)), so there are no tense, person or mood endings in the colorative verb, but these can be seen in the main verbs of
these sentences. We shall hereafter simply say that the CC is used in a particular tense, person, and mood, regardless of which constituent expresses them.

5.1 Tense

All the four Finnish tenses are represented in the corpus: present, past, perfect and pluperfect (Finnish has no future tense). Mostly, the CC is used in the past (see examples (1), (4), (6)) or pluperfect tense ((16), (17), (22)). There are 65 examples in the past tense and 8 in the pluperfect tense. In three sentences the copula is omitted but the colorative verb is in the participle form in the perfect or pluperfect tense. These can be interpreted as pluperfects, as in the following example (23), where the next verb *oli tulluq* ‘had come’ is in the pluperfect.

(23) *neq istuak kōkōttānneet vierekkāin kun ne oli*

they sit-INF COL-PTCP-PL side-by-side when they have-PAST-3SG

*tulluq isā ja ātti kottii* (LA, Haapavesi)

come-PTCP father and mother home-ILL

‘they [the girls] had been sitting-COL side by side when father and mother had come home’

In 11 cases the CC is in the present tense (see (19) and (24)).

(24) *se tullaj jonottaa sielā se hauki* (LA, Rantasalmi)

it come-INF COL-3SG there that pike

‘the pike comes-COL there’

Only one CC is in the perfect tense:

(25) *sit oos ste kyntāā pōhōrtty sahroilla*

it-PART have-3SG then plough-INF COL-PASS-PTCP harrow-PL-ADE

‘it [a field] has been then ploughed-COL with a harrow’ (LA, Temmes)

The frequency of past and pluperfect tenses reflects the tendency to use the CC in narrations. It is worth remarking that although the Finnish present tense is also used for future time, there are no such examples in the corpus. Neither does the present tense in the corpus refer to anything happening ‘now’ at the very moment of the interview. The present tense is used for
dramatizing narration, as in example (24), and for making a general statement, as in example (19). This kind of tense usage is, at least to some extent, due to the interview situation, where the informants were often asked to talk about ‘old times.’ In Luttinen’s corpus (2000) the CC is also used in the present tense to refer to real time:

(26) näkköökö ne pojat mittään kum minä seestäp pojotan
see-3SG-OX they boy-PL anything when I stand-INF COL-1SG

tässä eessä (Luttinen 2000, Kiuruvesi)
here in-the-way

‘Can the boys see anything when I’m standing-COL here in the way?’

(27) no, nyt se pallaah hurottaa
PRT now it burn-INF COL-3SG

Well, now it’s burning-COL’

5.2 Person

The most common personal form found in the CC’s of our corpus is the 3rd person singular (37 cases; see e.g. examples (6), (16), (17)), while the 3rd person plural comes next (19 cases, see e.g. examples (19) and (23)). Ten sentences are in the 1st person singular (e.g. (1) and (10)), and in one sentence there is the regular personal ending of the 1st person plural (see (30) below). Thus, the first and third personal forms cover together 67 sentences. In 17 sentences the predicator is in the passive form (cf. (4) and (25); see also (28) and (29)). Finnish impersonal passive sentences do not express the identity of an agent, but it is almost invariably a human being. Passive sentences can refer to an animal, a machine or the like only metaphorically, if the verb typically has a human agent (ISK 2004: 1254, 1261–1262). This differs from the English passive, where the agent need not be human. Moreover, it is possible in English to express the agent explicitly with the by construction, whilst in Finnish passive sentences the agent cannot be identified. In our corpus, all passive sentences have a human agent.
(28) sinnehän sitä puohattiiv viijä
there-AFFX it-PART COL-PASS-PAST take-INF

jokimyllyihinki (LA, Ylivieska)
water-mill-PL-ILL-AFFX

‘it [the grain] was taken-COL to the water mills, too’

In most dialects, as well as in modern spoken Finnish, the passive form is commonly used instead of the regular personal ending in the 1st person plural (ISK 2004: 1221).

(29) me mentiin sieltä puimaa... niillä puijjar
we go-PASS-PAST from-there thresh-MAINF-ILL they-ADE thresh-INF

ryskytettiin sitte (LA, Ylivieska)
COL-PASS-PAST then

‘we went from there to thresh... then we threshed-COL with them [flails]’

However, there are no examples of the passive occurring immediately after the 1st person plural personal pronoun me ‘we’ in this corpus. One example with the pronoun me has a regular personal ending:

(30) me kaataa hurrautimma yhtäällep päi
we bring-down-INF COL-PAST-1PL same- ADE direction

ihtennäs sinne (LA, Haapavesi)
self.PX.1PL there

‘we brought-COL ourselves down to the same side’

Strikingly, there are no examples of the 2nd person in the CC. In one sentence the predicator is in the imperative 2nd person singular, but in the CC both verbs are in the A infinitive.

(31) ee muuta kun... alas syöttööt töppöötee
not else-PART than start-IMP-2SG feed-INF COL-INF

‘just... start to feed-COL [the child]’ (LA, Vieremä)

The lack of the 2nd person is to be expected in the corpus: since the informants do not usually really discuss with the interviewers, and in narrations, the listener may not be addressed directly. Luttinen (2000) has a few examples of the 2nd person in free speech, although the 1st and 3rd persons are more common in her corpus:
Thus, there are no systematic restrictions that would rule the 2nd person out; rather, it is relatively uncommon in the CC.

5.3 Mood

In Finnish there are four moods: indicative, conditional, imperative and potential (see e.g. Karlsson 1987: 138–145; ISK 2004: 142). The vast majority (83/85) of the sentences are in the indicative mood. The conditional mood is used in the following example:

(34) yl puolentoista kilometrij jos latoa mättäṣ
   more one-and-a-half GEN kilometer GEN if pile-INF COL-COND-3SG
   ‘[there were] more than a mile [of them] if you pile-COL [them] together’ (LA, Rautalampi)

The imperative is used once (see example (31) above). Luttinen’s (2000) examples are in the indicative mood too, except for two sentences in the conditional. The potential mood does not occur in our corpus.

5.4 Negation and interrogation

In the corpus there are no negative or interrogative sentences. Luttinen (2000) has one example of interrogative sentence (cf. (35)), but no negative sentences.

(35) tapella nyhtääkö ne siellä nykyään?
   fight-INF COL-3SG-QX they there nowadays
   ‘do they fight-COL there [in the pub] nowadays?’

Apparently, negative CC’s are very exceptional, but they can still exist. Ojutkangas has one example, even if it is of the two-finite variant (the infinitive variant would be pyörtäy kupsahda):
Thus, a positive declarative clause is the most typical sentence type where the CC occurs, and it is very unusual to use the CC in questions or in any other mood than in the indicative. This rather strong pragmatic restriction is obviously connected to the role of the CC in the narrative function.

6. **Semantic analysis**

In this study we have pointed out that the CC has a special expressive force which distinguishes it from several other verbal expressions. Nevertheless, there are no absolute syntactic criteria that distinguish the CC from other infinitive clauses. The pragmatic restrictions are primarily tendencies connected to the narrative function of the CC; they apparently uphold the expressive force of the CC but do not explain it. Therefore, expressivity has to be essentially due to semantic factors. The colorative verbs seem to be in a key position, as they are fundamentally different from finite verbs in other types of infinitive clauses. It is, however, evident that expressivity is not merely a lexical phenomenon. The semantic analysis of this section focuses on three components of the CC: neutral verbs (6.1), subjects (6.2), and colorative verbs (6.3).

6.1 **Neutral verbs**

In the 85 constructions of our corpus there are 51 neutral verbs, the majority of which occur only once or twice. By far the most common verb is *mennä* ‘go,’ which occurs in 14 constructions. *Tulla* ‘come’ occurs five times, *viedä* ‘take’ and *käydä* ‘go, walk’ four times, *tehdä* ‘do, make’ and *lyödä* ‘hit, beat’ three times. If a neutral verb is used in multiple constructions, it never occurs with the same colorative verb; thus, all the 85 combinations of neutral and colorative verbs are unique in this corpus, except for one single case where a construction is used again by the same speaker in the next utterance.

The most common neutral verbs *mennä* ‘go’ and *tulla* ‘come’ describe movement by the subject referent, especially intentional movement in a particular direction, as do *kävellä* ‘walk,’ *käydä* ‘go, walk’ and *kulkea* ‘go,
follow.’ Some verbs describe a particular manner of movement (kiitää ‘go fast, rush, whip,’ laukata ‘gallop,’ hypätä ‘jump,’ tanssia ‘dance’), while two verbs describe unintentional movements (kaataa ‘fall (flat)’ and pudota ‘fall (off)’). All of these are typically intransitive, as are the verbs istua ‘sit,’ seistä ‘stand’ and olla ‘be,’ which refer to the position or the state of the subject referent. Another common group consists of transitive verbs which describe carrying, hitting, treating or handling different objects. These verbs can be relatively general (kaataa ‘bring down,’ kantaa ‘carry’, lyödä ‘strike, beat,’ tehdä ‘make,’ viedä ‘take away’) or more specific (ampua ‘shoot,’ maalata ‘paint,’ pestä ‘wash,’ sahata ‘cut,’ takoa ‘hammer’). Furthermore, many describe typical activities in a rural environment: kyntää ‘plough,’ niittää ‘mow,’ puida ‘thresh,’ pyytää ‘hunt.’

The verbs in these two groups together cover about 75% of the constructions. Among the rest are verbs describing basic human functions, such as hengittää ‘breathe,’ kuolla ‘die,’ nukkua ‘sleep,’ syödä ‘eat,’ syöttää ‘feed,’ juoda ~ ryypätä ‘drink’ and pieraista ‘fart,’ but also katsoa ‘look,’ haastaa ‘talk’ and sanoa ‘say.’ Naturally, most of these can also be related to animals: haukkua ‘bark’ and kukkua ‘cuckoo,’ for instance, describe animal sounds.

The selection of neutral verbs is rather similar in Luttinen’s (2000) corpus. The most common neutral verbs are mennä and tulla, while kävellä and olla occur several times, but so do the verbs ajaa ‘drive,’ juosta ‘run’ and maata ‘lie (down),’ which are not found in our corpus. However, they fit well into the semantic categories sketched out above. This is also the case with the verbs that occur once or twice. Luttinen also has some neutral verbs describing natural phenomena: palaa ‘burn’ and sataa ‘rain.’

It is interesting that the selection of neutral verbs bears some resemblance to the verbs in serialized constructions. Foley and Olson postulate a hierarchy for serial verbs on the basis of the number of languages in which they are used. The most favoured are the “basic intransitive motion verbs,” such as ‘come’ and ‘go,’ while the next stage involves serialization with postural, motional and directional verbs, such as ‘stand’ and ‘lie’ (Foley and Olson 1985: 41–42). As mentioned above, verbs of these types are also common in the CC. However, transitive verbs are seldom used in verb serialization, and they form the last stage in Foley and Olson’s hierarchy (1985: 44). In this respect, a relatively wide range of types of verbs is used in the CC, but it is worth noting how concrete and physical the neutral verbs are: they describe events which could actually be seen or heard. Few verbs describe emotions or mental states, such as kirota
‘swear,’ *nauraa* ‘laugh,’ and *suuttua* ‘get angry;’ in Luttinen’s corpus there are also *kehua* ‘boast’ and *valehdella* ‘(tell a) lie.’ Even the general verbs are used in the most concrete way: in example (37) *olla* ‘be, have’ (which has many general, abstract, and even grammatical functions) just means ‘be still, immobile.’

(37) *se ollam mollotti voaj ja kuola tul*’

it be-INF COL-PAST-3SG just and dribble come-PAST-3SG

*suusta ja, silemät nurim peässä* (LA, Laukaa)

mouth-ELA and eye-PL upside-down head-INE

‘[the child] just was-still-COL, dribble dropping from his mouth, eyes upside down’

Moreover, the verb *käydä* has many abstract meanings such as ‘happen,’ ‘occur,’ ‘attend,’ ‘begin’ or ‘visit,’ but in the CC it is only known in its most basic and concrete meaning ‘to walk, go by foot.’

(38) *käyrä jumpathim perässä k- oli raskas*

walk-INF COL-PAST-PASS behind when have-PAST-3SG heavy

*kuorma* (LA, Veteli)

‘we walked-COL behind as [the horses] had a heavy load’

Stylistically all the neutral verbs are unmarked: they are ’basic words,’ primary expressions for the respective states, events and actions. Therefore, they do not usually have neutral synonyms with the same denotative meaning. They can be translated easily and they are listed in most dictionaries. All the neutral verbs of the corpus are listed e.g. in *Nykysuomen sanakirja* (NS). They can also be used in many text classes; this can be seen in the frequency dictionary of Finnish (Saukkonen et al. 1979), which was compiled in the 1960s from fictional and non-fictional books, radio programmes, newspapers and periodicals. It has all the neutral verbs of our corpus, except for four: *kukkua* ‘to cuckoo,’ *kyteää* ‘smoulder,’ *loukuttaa* ‘separate fibres from the flax,’ and *pieraista* ‘fart.’ The absence of these four words from the dictionary means that they have not occurred “in at least three different text samples or two mass medium and text classes” (Saukkonen et al. 1979: 36). Thus, these words do not (did not) belong to the most frequent words in written Standard Finnish, but they are not necessarily uncommon or out of the ordinary. *Loukuttaa* ‘separate
fibres from the flax’ is quite specific, but it is not stylistically marked, and neither is kyteä ‘smoulder.’ Their absence from the frequency dictionary can be regarded as coincidental. On the other hand, it is easy to understand that pieraista ‘fart’ is very common in colloquial speech but does not (did not) occur in many text classes.

The most unexpected omission among the neutral verbs is kukkua ‘to cuckoo.’ The verb is clearly as onomatopoetic as its parallel in English; in fact it would be more suitable as the colorative verb of the CC. In most examples, neutral verbs differ significantly from their colorative counterparts, but there is no very clear stylistic difference between kukkua and helkytellä in the following example (39). Both are onomatopoetic, although kukkua is more conventional and specific. It can only denote a cuckoo’s call, while helkytellä can describe many different sounds: playing the kantele (the Finnish zither), hammering or weaving (NS s. v. helkytellä).

(39) kääki kukkuuh helkytell kevväilä (LA, Liperi)
cuckoo cuckoo-INF COL-PAST-3SG spring-ADE ‘a cuckoo was calling-COL in the spring’

6.2 Subjects

The concreteness of the CC’s, manifest in the neutral verbs, can be seen in their subjects as well. In most cases the subject referent of a CC is human; this is obvious in 1st person cases and passive forms (see section 5.2), but it holds true in most sentences in the 3rd person as well. Sometimes the subject is a noun, like ‘old lady’ in (7). While the 3rd person pronouns se ‘he, she, it, that’ and ne ‘they’ can refer to humans, animals or inanimate and abstract objects, their referent has to be deduced from the context. Most commonly it is a human being, as in (17) and (23). Relatively frequently, in 17 examples, the subject of the CC is an animal or animals, like wolf (6), horse (22) or pike (24). This is apparently due to the topic of the interviews, which was mostly connected to the rural environment, hunting, fishing and animal husbandry. Only in five cases is the subject referent non-human and non-animal, as in the following example (see also the rare inanimate case ‘machines’ in example (19)), and it is never abstract. This holds true in Luttinen’s (2000) corpus as well.
Thus, one must inevitably conclude—in the neutral verbs as well as in the selection of subjects—that the CC is highly context-specific and it is mostly used to refer to concrete things and events, hardly ever to abstract concepts. The same phenomenon is reflected in pragmatic restrictions: the CC is seldom used in the conditional mood or in negative sentences.

### 6.3 Colorative verbs

Compared to neutral verbs, colorative verbs form a more open class. There is a different colorative verb in almost every CC in our corpus: 78 different colorative verbs occur in 85 examples. It is not always easy, even for a native speaker, to define their meaning. In general, we can only say that the colorative verb emphasizes or specifies the denotative meaning of the neutral verb and that it often shows the action in a dramatic or comic light. Some colorative verbs are rather conventionalized and they can be found in dictionaries; but sometimes the meaning has to be deduced from the context, and it is questionable if colorative verbs have any ‘lexical’ meanings at all. It is difficult, if not impossible, to describe their meaning literally. This is an observation also made of ideophones in research into other languages (see Childs 1994: 188–189). Ideophones are highly specific (Kilian-Hatz 2001: 160; Klamer 2001: 165; Watson 2001: 393 calls them ‘ultimate hyponyms’), and their interpretation is highly dependent on the context (Schultze-Berndt 2001: 364).

The significance of context can be seen when the same colorative verb is used in different CC’s. The verb *lotkottaa* is used with *mennä* ‘go’ in example (6’) and with *tulla* ‘come’ in example (41).

(6’) *susī lotkottī mennā erellā* (LA, Renko)
‘the wolf went-COL ahead’

(41) *kiärmeet tullal lotkottivat tuasen aejan alaites* (LA, Liperi)
snake-PL come-INF COL-PAST-3PL again fence-GEN under
‘the snakes came-COL under the fence again’

The neutral verbs are alike—they describe movement in different directions—but it is difficult to say whether the gait of a wolf and the slithering
of snakes have something else in common. It is possible that the colorative verb here emphasizes the fact that the animals move low and fast, jerking and determined. In contrast to ‘come’ and ‘go,’ in the following examples (42) and (43) neutral verbs are very different: *haastaa* ‘talk’ and *takoa* ‘hammer’:

(42) jaloilaan käveliit ja juoksiiit ja *haastaa*
foot-PL-ADE-PX-3PL walk-PAST-3PL and run-PAST-3PL and talk-INF

*nalkutelliit* (LA, Nuijamaa)
COL-PAST-3PL

‘[the disabled people] were walking and running and talking-COL’

(43) sepät *nalkutel’* takkoon ne (LA, Nilsiä)
blacksmith-PL COL-PAST-3SG hammer-INF they
‘the blacksmiths hammered-COL them [scythes]’

Possibly the common component here is onomatopoetic: a loud, high-pitched sound produced by both talking and hammering. But the neutral verbs *kerjätä* ‘beg’ and *kiitä* ‘rush,’ occurring with the same colorative verb *pöllyyttää* in the following examples (44) and (45), are even more incompatible.

(44) ku äiti vaenoosta jäe niin juoksenteli
when mother deceased-ELA be-left-PAST-1SG then run-PAST-1SG

*ja kerjätäp pöllytin* (LA, Vieremä)
and beg-INF COL-PAST-1SG

‘when my mother died [I was so young that] I just ran around begging’

(45) muuta kuv viskattii hevoselloimi rekkeej ja *kiitäp*
else-PART than throw-PASS-PAST horse-rug sleigh-ILL and rush-INF

*pöllyyttetii*
COL-PASS-PAST (LA, Vieremä)

‘we just threw a horse-rug to the sleigh and rushed along’

In what sense can a child’s begging and a horse’s run be described with the same word? Here it is worth noticing that the two utterances were produced by the same informant. This suggests that in some cases just the occurrence of the CC *per se* is more crucial than a particular colorative verb. The colorative verb *pöllyyttää* does not necessarily carry any specific meaning;
it can rather be interpreted as a part of the speaker’s repertoire. However, also example (31), with the colorative verb *töppööttää*, was produced by the same informant, and it is rather the rule than the exception that the same speaker uses different colorative verbs. After all, the selection of colorative verbs seems to be, at least to some extent, a matter of personal choice.

Because most of the colorative verbs occur just once in our corpus, it is only possible to define a highly context-specific meaning for them. In some cases, conclusions can be drawn with the help of adverbials or other expressions of manner in the same utterance. A common meaning or shade of meaning expressed with the CC is ‘to do something quickly, suddenly, with ease,’ as in examples (46) and (47); a similar meaning is also found in examples (1), (19) and (30).

(46) *kohta kuoltaj jyrähti se ukko* (LA, Lapinlahti)

soon die-INF COL-PAST-3SG that old-man

‘the old man died-COL soon’

(47) *se oli kiireestij juossuq... mennäl länkännys sinnes* saunaj (LA, Haapajärvi)

she have-PAST-3SG hurriedly run-PTCP go-INF COL-PTCP there

sauna-ILL

‘she had run in hurry... gone-COL to the sauna’

The opposite meaning ‘to do something slowly, hard, with an effort’ is also common; see examples (48) and (49) (and also (10), (31) and (38)).

(48) *kus se maalatakkit tuhurattiin nii siinä meni aikaa* (LA, Kihniö)

time-PART

‘as it [the coffin] was painted-COL, too, it took a lot of time’

(49) *kolomella jalalla köntäš vuam männa* (LA, Nilsä)

three-ADE foot-ADE COL-PAST-3SG only go-INF

‘[the cow] went-COL on three feet only’

In some cases the colorative verb is onomatopoetic, as in examples (50) and (51). This is evident in example (17), apparently also in (42) and (43).
In addition to the volatility and opacity of the meaning of colorative verbs, their phonological shapes also have considerable variation. (On phonological variation of ideophones in Finnish, see Jarva 2003: 79–84; in Finnish and Estonian, see Mikone 2001: 225; in African languages, see Childs 2001: 69.) It is very common that there are multiple closely related phonological items. For example, there is hurauttaa in our corpus (30) and hurottaa in Luttinen’s corpus (27), and in the examples below there are the verbs jytkytellä (52), jykähtää (53) and jykäyttää (54); see also tuhahtaa in (17) and tuuhittaa in (50). This kind of semantic and phonological variation makes it difficult to define which items are to be regarded as independent words and which are just variants of the same word. The colorative verbs seem to violate the principle of one-to-one matching of form and meaning; this is a suggestion also made of ideophones (Childs 1994: 189; Klamer 2001: 169).

(50) se hyvi isosti hengittää tuuhitti (LA, Ylikiiminki)
   it very loud breath-INF COL-PAST-3SG
   ‘it [the cow] was breathing-COL very loud’

(51) ei mitää muuta ko nauraa hörähytti ja niin se
   not anything else-PART than laugh-INF COL-PAST-3SG and so he
   nousi ylös (LA, Veteli)
   stand-PAST-3SG up
   ‘[he] did nothing but laugh-COL, and then he stood up’

(52) oh hyvä kävellä jytkytelläs siellä ja olla, kun on
   be-3SG good walk-INF COL-INF there and be-INF when be-3SG
   tervennä (LA, Lapinlahti)
   healthy
   ‘it is good to walk-COL and be there when you’re healthy’

(53) siellä oel sairas lehmä yöllä kuollaj jykähtännä
   there have-PAST-3SG sick cow night-ADE die-INF COL-PTCP
   ‘a sick cow had died-COL there at night’ (Luttinen 2000, Kiuruvesi)

(54) tämä, ni. lyyvää jykäyttä (Luttinen 2000, Kiuruvesi)
   this PRT punch-INF COL-PAST-3SG
   ‘this one [male friend], well, he punched [me]’
On the other hand, many of the colorative verbs in the corpus are also used as independent words and mentioned in dictionaries. NS knows 47 of the 78 colorative verbs, and some words absent as such from the dictionary are found in it in closely related forms. For example, the verb *tuuhitti* (see 50) is not found in NS, whereas the very similar verb *tuhista* ‘sniff, snuffle, snort’ is. It is interesting that in total 18 colorative verbs in the corpus, including, for example, *hörätta* ‘to laugh deep, low’ in example (51), are onomatopoetic according to NS. However, in some cases onomatopoetic verbs can have other meanings as well: the verb *jyräättää* ‘to laugh deep, low’ in example (55) below the verb *laahata*, for instance, which can describe the sound of a thunderclap, occurs with the neutral verb ‘die’ in example (46).

Some colorative verbs in our corpus are labelled ‘descriptive’ in NS, but there are also 18 verbs with no special stylistic implications. It is also remarkable that although colorative verbs are in general unknown in the frequency dictionary (Saukkonen et al. 1979), it does include five of them. This suggests that at least some colorative verbs can be used in different registers and are not inevitably stylistically marked. Verbs of this kind include, for example, *haaskata* ‘waste, squander, fritter away, chuck away,’ *laahata* ‘drag; trail, shuffle, draw’ and *vääntää* ‘wring, bend, twist, wrench.’ They cannot be called ideophones or coloratives as such, but in the CC they are used in a way which gives them strong expressive connotations. In example (55) below the verb *laahata*, for instance, is used as a colorative verb.

(55) *nee laahas  mennäs sit tuola  lumis* (LA, Renko)

they COL-PAST-3SG  go-INF then over-there snow-PL-INE

‘then they were going-COL there in the snow [with self-made skies]’

This sentence could be translated as something like ‘they went dragging...;’ however, the meaning is not exactly the same. It is significant that in Standard Finnish *laahata* is a transitive verb, but there cannot be an object (e.g. ‘skis,’ ‘feet,’ ‘themselves’) in this clause, as *mennä* ‘go’ is intransitive. If the meaning were ‘drag themselves,’ the intransitive form *laahautua* should be used. Thus it is obvious that *laahata* has not been used in this utterance in the same way as it is used in Standard Finnish.

Although some colorative verbs are not expressive without a context, or they are neutral in some contexts, it is clear that they still have certain

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6 The dictionary uses abbreviations *deskr.v* ‘descriptive verb’ and *onom.v* ‘onomatopoetic verb.’
potential for expressivity, i.e. they can be used expressively in the CC. A neutral denotative verb with no expressive connotations cannot easily be used in that position. This is illustrated in example (56) with an obviously neutral, non-expressive verb *putosin* ‘I fell down.’ It is possible to say *minä kaaduin* ‘I fell (flat)’ or *minä putosin* ‘I fell down’ but *kaatua putosin* is almost impossible. It blurs the meaning to such an extent that it breaks the rules of the language.

(56) *minä sinne lumeen kaatua putosin*

*I fell falling down in the snow’

However vague the meaning colorative verbs have, it is in any case evident that colorative verbs differ significantly from finite verbs that could be used in other infinitive clauses (*jaksaa* ‘can, be able to, bother,’ *muistaa* ’remember,’ *osata* ’can, be able to, know how to,’ *alkaa* ”begin, start,” *meinata* ‘mean, intend,’ *saada* ‘can, may, be allowed to,’ etc.; see section 4). The former are concrete and context-specific and they form an open class; the latter are abstract and conventionalized, forming a restricted class. These two verb types also differ in their relationship to the infinitive verbs with which they occur. Colorative verbs can modify the meaning of an infinitive, or they can express different shades of it, but they cannot deny it. In other infinitive clauses, the finite verb may be modal or permissive, and it is not presupposed that the event described by the infinitive verb really happened. For example, *männä hilasin* ‘I went.COL’ (10) means that the speaker really went somewhere, whereas *tahdoin mennä* ‘I wanted to go’ (11) does not necessarily imply that.

The difference between colorative verbs in the CC and finite verbs in other infinitive clauses is essential, and it is very seldom open to interpretation. There is, however, one ambivalent example (28) in our corpus with the verb *puohata*. The verb is an infrequent dialectal word unknown in Standard Finnish, and we suggested that it is a colorative verb:

(28’) *sinnehän sitä puohattiv viijäj*

*jokimyllyihinki* (LA, Ylivieska)

‘it [the grain] was taken-COL to the water mills, too’
However, Ikola et al. (1989: 286) have the verb *puohata* (which is the A infinitive form for *puohattiin*) in their list of “modal and permissive verbs” in LA; at the top of the list there are verbs such as *saada, voida, osata*, etc. They combine *puohata* with the colloquial *puuhata* ‘be busy (doing something)’ (Ikola et al. 1989: 294), and they give the same example as our example (28). Thus they have interpreted it as something like ‘we/they were busy taking the grain to the water mills, too’ (i.e. there is a finite verb + infinitive complement instead of a CC). This is still implausible, because there are no other mentions in the literature for *puohata* or even *puuhata* as modal or permissive, or that they occur with an A infinitive. Furthermore, the same verb occurs in Luttinen’s corpus:

(57) **kyllä ne itkee puohasivat tihkipiäitään** (Luttinen 2000, Kiuruvesi)
      yes they cry-INF COL-PAST-3PL headlong
      ‘they were crying-COL headlong’

Thus, it appears that the possibility of different interpretations only arises when the word is only known in a particular dialect and a researcher without a native skill of that dialect cannot state with certainty whether the word is a modal or a colorative verb.

7. **Conclusion: the colorative construction and expressivity**

In this paper we have frequently referred to the expressive force of the CC and stated that this force is characteristic, even essential, to the CC and is what distinguishes it from other infinitive clauses. However, it still remains difficult to definitely, precisely pinpoint where this force comes from.

As stated in section 4, the CC does not differ syntactically from other infinitive clauses; no absolute criteria were established in this study at any rate. In a typical CC the word order is different from that in a typical infinitive clause; however, it is easy to find exceptions to this, since word order in Finnish can vary. A possibly more significant difference is the cohesion of the CC, as it is impossible in Standard Finnish to put any constituent between the verbs. But even this does not hold true in dialects, where the CC has a less coherent variant.

There are some pragmatic restrictions, or at least restrictive tendencies, regulating how the CC may be used (section 5), and they are obviously connected to the role of the CC in the narrative function. In this sense the CC differs from other infinitive clauses. In general it can be said that the
CC describes what happens now or did happen, rather than what does not happen, should happen, could have happened, etc. That CC is highly context-specific can also be seen in the neutral verbs and in the selection of subjects (see sections 6.1 and 6.2). The neutral verbs refer to concrete events, hardly ever to abstract concepts. The subject referent of the CC is typically animate, either a human being or an animal.

The difference between colorative verbs in the CC and finite verbs in other infinitive clauses is essential (section 6.3). Colorative verbs fit into many of the findings made about ideophones in research into other languages. Still these verbs do not uphold the expressive force of the CC alone. Not all colorative verbs are indisputably ideophones; rather, at least some of them can be used in different registers and they are not stylistically marked. Nevertheless, they have potential for expressivity. A neutral denotative verb with no expressive connotations cannot easily be used in the same position.

In the CC, syntax and semantics are in a particularly close interaction and therefore reinforce the expressivity of the construction: the colorative verbs mostly do have an expressive force of their own, but the syntactic construction further emphasizes it. However, syntax cannot uphold expressivity by itself: it is not possible to use any verb in the CC. It is worth noting that even if the CC does not differ formally from other infinitive clauses, the difference between them is clear in practice. Ambivalent cases are rare, and they are caused by unusual or unknown dialectal vocabulary. Insufficient context may also impair the interpretation of our examples.

The CC has been compared to the serial verb construction, but we argue that they differ quite considerably from one another (see section 2). Yet it must be admitted that the CC also has a two-finite variant which fits better the prototype of a serial verb construction. However, the functions of typical serial verb constructions and the CC are essentially different, regardless of whether both verbs are finite or not. Serial verb constructions do not usually have expressive or even adverbial functions. Neither does research into serial verb constructions suggest such stylistic differences as can be observed in the CC.

As colorative verbs are in many respects comparable with ideophones, it is interesting to consider in which syntactical constructions ideophones are used in different languages. In many languages around the world ideophones are used mostly in specific syntactic positions, in specific structures or with specific words. They quite commonly occur in alliance with neutral verbs. They are referred to as ‘co-verbs’ (e.g. Nuckolss 2001: 276; Schult-

In Finnish, the situation is somewhat different. Ideophones can also be used elsewhere than in the CC, and although in the CC there has to be an ideophone or at least a ‘potentially expressive’ verb, the construction itself is not syntactically unique but parallel with other infinitive clauses. There are some pragmatic restrictions, but in a wider perspective Finnish colorative verbs can be used relatively freely in many syntactical positions. It is also worth noting that colorative verbs are fully inflected, in contrast to languages where ideophones are uninflected and occur only with inflected verbs; as Childs (1994: 185) puts it, in African languages “ideophones display very little morphology.” Thus, the full inflection of Finnish colorative verbs, as tupsahdin in example (58), is quite exceptional.

(58) minä kaatua tupsahdin
I fall-over-INF COL-PAST-1SG
‘I fell with a thump’

Considering what happens in many other languages, it could be expected that it is the neutral verb that would be inflected while the colorative verb stayed in the infinitive form (59). Alternatively, the colorative item may not be a verb at all, but rather an uninflected ideophone that does “function somewhat apart from the matrix language” (Childs 1994: 178) as illustrated in example (60). The example is acceptable—especially if tups is interrupted as an onomatopoetic interjection and preceded by the conjunction että ‘that’—while (59) is absolutely ungrammatical.

(59) *minä kaaduin tupsahtaa
I fall-over-PAST-1SG COL-INF
*I fell to thump’

(60) ?minä kaaduin (että) tups
I fall-over-PAST-1SG that thump
?I fell ‘thump’

Is it then possible to explain why only the colorative verb is inflected, although this appears to be exceptional? The construction illustrated in
example (59) is unacceptable because the neutral verbs are conventional lexical items with particular valency: they cannot join with an A infinitive of any verb. Colorative verbs do not, for the most part, have conventional valency in the same sense, but they may have different arguments, e.g. be either transitive or intransitive, depending on the situation. It is also interesting that when a finite verb and an A infinitive occur in the same clause any other arguments than subject are dependent on the infinitive verb. Thus, the CC has the same argument structure as its neutral verb. On the other hand, example (59) is fairly close to the construction with an E infinitive:

(61) minä kaaduin tupsahtaan
    I fall-over-PAST-1SG COL-EINF
‘I fell with a thump’

Interestingly, Ojutkangas (1998: 111) points out that constructions like this could probably be interpreted as “separate con-verb forms;” as mentioned above, ideophones are also interpreted as con-verbs in some languages. However, the meaning in example (58) is not exactly the same as in example (61): while the former describes an event as a whole, the latter (with the E infinitive) separates it into two events. In most cases it can be translated into English with an adverb (e.g. the prepositional phrase ‘with a thump,’ sometimes a present participle such as ‘thumping’). (For the E infinitive, see ISK 2004: 493; Karlsson 1987: 157–158 has a traditional term 2\textsuperscript{nd} infinitive).

Although the inflectional possibilities of Finnish colorative verbs seem to be rather peculiar, there are some, albeit few, examples of inflected ideophones in different languages. Rubino (2001: 303–304) points out that ideophones in Ilocano have a highly productive derivational and inflectional morphology. According to Nuckolss (2001: 272), in one dialect of Quechua “ideophones can be used to form verbs fully inflected for tense, person, and number,” while Kaufman (1994: 66) gives examples of “symbolic roots” in Huastee which are “thoroughly integrated into the derivational and inflectional morphology.” Thus, it is possible that the ‘ungrammaticality’ of ideophones has been overemphasized in the literature, possibly because they have mostly been examined in isolating or otherwise morphologically less complicated languages. In this respect it is not extraordinary that the Finnish language exploits its rich morphological and inflectional possibilities in its ideophones and colorative verbs.
Finally, we attempt to sketch out some factors which may explain how the CC has developed. The three different variants of the CC have to be taken into account:

(a) *kaatua tupsahdin* (as in examples (1) and (58)). This variant may be called ‘basic’ as it is the most common in our corpus and it is also known in Standard Finnish. The variant is coherent, i.e. there cannot be any constituents between the verbs.

(b) *tupsahdin ... kaatua* (as in examples (6) and (10)): This variant with an ‘inverted’ word order covers about 20% of our corpus. It is not acceptable in Standard Finnish, but most of its equivalents in Balto-Finnic languages have a corresponding word order. Variant (b) is less coherent than (a), as there may be constituents between the verbs.

(c) *kaaduin tupsahdin* (as in example (10)): This ‘two-finite’ variant is not found in our corpus, but it undoubtedly exists in Finnish dialects and it is also known in Standard Finnish. This type has the widest distribution in the Finno-Ugric language family, as it has equivalents also in Sami and Hungarian. There may be constituents between the verbs, but apparently the word order is reversed from variant (b); i.e. the neutral verb precedes the colorative one.

In variant (c) there is just asyndetic juxtaposition with no conjunction. This is typical of the syntax of Finno-Ugric languages and it is supposed to be the original state, since conjunctions in these languages are innovations or borrowings (Pulkkinen: 1966: 14–15; Ojutkangas 1998: 111). The wide distribution of variant (c) seems to support the idea that it is the most archaic one. But it is still not evident that variants (a) and (b) have developed on the basis of (c); at least some explanation is needed why a neutral verb has changed to a non-finite form. One reason could be that asyndetic juxtaposition, albeit original, has become so extraordinary in Finnish that it has been replaced with an infinitive clause. Pulkkinen (1966: 214) suggests that asyndetic juxtaposition has been retained in Finnish to a lesser extent than in most Balto-Finnic languages. The development towards the infinitive clause could also be explained with grammaticalization.
It is significant that Givón (1991: 93–94) links cohesion and grammaticalization in his study of serial verbs: when they “display a much higher frequency of adjacency to other verb stems,” this also means “a higher potential for co-lexicalization or co-grammaticalization.” This suggests that variant (b) with ‘inverted’ word order is less grammaticalized than variant (a), as constituents are allowed between the verbs. Interestingly, variant (b) bears a closer resemblance to the other infinitive clauses also as to its word order, which is finite + infinitive (see section 4.1). Thus cohesion and word order work in interaction. Variant (b) also has a wider distribution in Balto-Finnic languages.

It can therefore be supposed that variant (b) is older than variant (a), and this leads to the conclusion that the CC has its origin in infinitive clauses rather than in asyndetic juxtapositions. But this view leads to the question, how has the semantic gap between other infinitive clauses and the CC developed? How is it possible that an expressive construction has adopted the same syntactical structure as modal, permissive and otherwise abstract infinitive clauses? To some extent the infinitive verb could be understood as an explanation or a specification of the finite verb; therefore the infinitive clause *minä tahdoin mennä* ‘I wanted to go’ (cf. example (11)) could be paraphrased as

(62)  
\[
\begin{array}{ll}
?\text{minä} & \text{tahdoin} \\
\text{I} & \text{want-PAST-1SG} \\
\text{so that} & \text{go-PAST-COND-1SG} \\
\text{?I wanted it to be so that I’d go.}'
\end{array}
\]

Similarly, the CC *susı lotkotti mennä* ‘the wolf went-COL’ (cf. example (6)) could be paraphrased as

(63)  
\[
\begin{array}{ll}
\text{susı} & \text{lotkotti} \\
\text{wolf} & \text{COL-PAST-3SG} \\
\text{so that} & \text{go-PAST-3SG} \\
\text{‘the wolf COL-ED so that it went.’}
\end{array}
\]

Whatever the development has been, variant (a) *kaatua tupsahdin* is its end point. With its cohesion it is the most grammatical and most grammaticalized variant, and it is also the most marked one, as it clearly differs from both the asyndetic juxtaposition and the infinitive clause. On the basis of our corpus, it is also the most frequent. The more distinguished the grammatical form is, the greater its expressive force.
Abbreviations

ADE   adessive case
AFFX  affirmative suffix
CC    colorative construction
COL   colorative verb
COND  conditional mood
EINF  E infinitive
ELA   elative case
GEN   genitive case
ILL   illative case
IMP   imperative mood
INE   inessive case
INF   (A) infinitive
MAINF MA infinitive
NEG   negative form
PART  partitive case
PASS  passive
PAST  past tense
PL    plural
PRT   particle
PTCP  participle
PX    possessive suffix
QX    questioning suffix
SG    singular

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Detecting Syntactic Contamination in Emigrants: The English of Finnish Australians

Abstract

The paper discusses an application of a technique to tag a corpus containing the English of Finnish Australians automatically and to analyse the frequency vectors of part-of-speech (POS) trigrams using a permutation test. Our goal is to detect the linguistic sources of the syntactic variation between two groups, the ‘Adults,’ who had received their school education in Finland, and the ‘Juveniles,’ who were educated in Australia. The idea of the technique is to utilise frequency profiles of trigrams of POS categories as indicators of syntactic distance between the groups and then examine potential effects of language contact and language (‘vernacular’) universals in SLA. The results show that some features we describe as ‘contaminating’ the interlanguage of the Adults can be best attributed to Finnish substratum transfer. However, there are other features in our data that may also be ascribed to more “universal” primitives or universal properties of the language faculty. As we have no evidence of potential contamination at the early stages of the Juveniles’ L2 acquisition, we cannot yet prove or refute our hypothesis about the strength of contact influence as opposed to that of the other factors.

1. Introduction

The present paper applies computational techniques to obtain an aggregate measure of syntactic distance between two different varieties of English spoken by first and second-generation Finnish Australians and examines the degree of what we call syntactic ‘contamination’ in the English of the older emigrants (Adults). Our goal is to detect the linguistic sources of the variation between the two groups of speakers and interpret the findings from (at least) two perspectives, universal vs. contact influence. In our reading, the notion of ‘universal’ is concerned, not with hypotheses about Chomskyan universals and their applicability to second language acquisition (SLA) or with hypotheses about potential processing constraints in any detail, but rather with more general properties of the language faculty.

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faculty and natural tendencies in the grammar, called ‘vernacular primitives’ by Chambers (2003: 265–266). To explain differential usage by the two groups, we also draw upon the strategies, processes and developmental patterns that second-language learners usually evince in their interlanguage regardless of their mother tongue (Færch & Kasper 1983, Larsen-Freeman & Long 1991, Ellis 1994, Thomason 2001).

Our method of detecting the linguistic sources of the variation between the two groups of speakers relies on a comparison of two sets of data. Making inferences about deviant usage in the groups by utilising our knowledge of standard (acrolectal) Finnish and English has its obvious limitations. To avoid a bias towards the acrolect, we also make deductions about observed ‘contamination’ on the basis of what we know about non-standard (basilectal) varieties of English and Finnish. This is important because we also consider a potential impact of vernacular primitives on the data to be analysed. We note that some features in an acrolect (such as the –s inflection in the third-person present tense in English) are often in violation of natural tendencies in the grammar, whereas others, recurrent in all vernaculars (basilects), e.g. subject-verb nonconcord, seem to be in violation of standard varieties. And we need to consider both types of features, since first-generation Finnish Australians are primarily exposed to a variety of English that is best characterised as a (spoken) basilect, while second-generation speakers, being educated in Australia, are also exposed to a (spoken and written) acrolect.

Finnish emigrants to Australia seem to represent those language groups that shift to English very rapidly in the second generation. Clyne & Kipp (2006: 18) note that “high-shift” groups in Australia tend to be ones who are culturally closer to Anglo-Australians in contrast with some “low-shift” groups with different “core values such as religion, historical consciousness, and family cohesion.” Although the authors do not mention Finnish Australians, we argue that the high-shift groups also include them. Consequently, we expect to find most of the evidence for syntactic contamination in the English of first-generation Finnish Australians, as the second generation may have already shifted to English without any interference from Finnish.

The fundamental idea of the technique proposed is to tag the material to be investigated automatically and analyse the frequency vectors of POS (part-of-speech) trigrams using a permutation test. An analysis of a corpus
containing the English of Finnish emigrants to Australia is promising in that the procedure described in detail in section 4 works well in distinguishing two different groups of speakers and also in highlighting syntactic deviations between the two groups. Using frequency profiles of trigrams of POS categories as indicators of syntactic distance between the groups, we can also interpret potential effects of language contact and/or language (‘vernacular’) universals more economically and efficiently in SLA.²

Most of the cross-linguistic research into SLA (see, e.g. Odlin 1989, 1990, 2006a, 2006b) has so far focused on examining typical second-language learners’ errors, such as absence of the copula, absence of prepositions, different (deviant) uses of articles, loss of inflectional endings, and non-English word order, and on making inferences about them to explain potential substrate influence. Our aim, however, is also to detect a wider range of syntactic differences, including, e.g. the overuse of particular patterns and the eschewing of non-transparent or “difficult” constructions in one group of speakers as opposed to the other. In accordance with Nerbonne & Wiersma (2006), we therefore argue that by applying the procedure proposed in the following sections we are now in a better position than before to measure the “total impact of one language on another in the speech of bilinguals” and determine the aggregate effects of contact in the way that Weinreich (1953: 63) considered difficult to assay.

2. Finnish Australian English Corpus (FAEC)

We apply the procedure described in section 4 to a corpus compiled in 1994 by Greg Watson of the University of Joensuu, Finland (Watson 1995, 1996). The informants were all Finnish emigrants to Australia, and they are collectively classified in this report according to two criteria: (1) the ‘Adults’ (group ‘A,’ adult immigrants), who were over the age of 18 upon arrival in Australia; (2) the ‘Juveniles’ (group ‘J,’ juvenile immigrant

² Väyrynen (2005: 34-35, referring to a discussion in Hunnicutt & Carlberger 2001: 259) argues that the (word) trigram language model has been successful, because trigrams can, for example, simultaneously reflect the syntactic, semantic and pragmatic levels of language use. Although n-gram language models cannot account for syntactic long-distance dependencies, they can capture local word occurrence constraints efficiently (cf. Brill & Mooney 1997: 19, Sanders 2007: 1).
children of these adults), who were born in Finland and were all under the age of 17 at the time of emigration.³

The corpus studied for this report consists of 62 adult interviews and 28 immigrant child interviews, each lasting approximately 65 to 70 minutes. The average age of the Adults was 30 at the time of arrival, and 58.5 at the time of the interview, as opposed to the Juveniles, who were, on average, 6 at the time of arrival and 36 at the time of the interview. We will refer to those who emigrated as children as Juveniles and the interviews with them as Juvenile interviews even though their average age was 36 at the time of the interview. The genders are almost equally represented in the two groups. The interviews were transcribed in regular orthography by trained language students and later checked by the compiler of the corpus. We used only those sections of the interviews which consist of relatively free conversation, i.e. a total of 305,000 word tokens. We distinguish between adult immigrants and immigrant children based on Lenneberg’s (1967) critical age hypothesis, which suggests a possible biological explanation for successful L2 acquisition between age two and puberty.⁴

Neither group of speakers was formally tested for their proficiency of English. By observing the data, however, we can confidently say that the average level of the Adults’ English is considerably lower than that of the Juveniles’, who had received their school education in Australia, as opposed to the Adults, who were educated in Finland.

³ We would still like to find an opportunity to examine a comparison between non-immigrant English and extremely fluent immigrant English. We have no comparable data yet which would allow us to compare the Juveniles’ language to that of native Australians. An investigation of a third group of Finnish Australians born in Australia must be postponed until we have all their informal interviews transcribed, digitised, and analysed.

⁴ We are aware of the debate between the proponents of the ‘critical,’ or ‘sensitive’ period hypothesis (cf. e.g. Long 2005; Singleton & Ryan 2004) and those who favour not only biological, but also other, more general factors (such as socio-psychological and experiential variables) which may hinder the acquisition of native-like proficiency in L2 (cf. Moyer 2004).
3. Defining the language contact situation of Finnish Australians

The following description of the language contact situation of Finnish Australians is, by and large, based on a similar account of a number of immigrant groups of European origin in the United States (cf. Lauttamus & Hirvonen 1995), and supported by the biographical interview data elicited from our informants in Australia.

The immigrant generation (and particularly the Adults) will typically go on speaking Finnish at home as long as they live, and carry on most of their social life in that language. They struggle to learn English, with varying success. Even the best learners usually retain a distinct foreign accent and some other foreign features in their English. But we can say that they are marginally bilingual, as most of them can communicate successfully in English in some situations at least, although their immigrant language is clearly dominant.

The immigrant parents will also speak their native language to their children (the Juveniles), so this generation usually learns the ethnic tongue as their first language. The oldest child may not learn any English until he or she goes to school. The younger children often start learning English earlier, from their older siblings and friends. At any rate, during their teen years the second-generation children become more or less fluent bilinguals. Their bilingualism is usually English-dominant: they prefer to speak English to each other, and it is sometimes difficult to detect any foreign features at all in their English. As they grow older and move out of the Finnish communities, their immigrant language starts to deteriorate from lack of regular reinforcement.

In the second generation it is still common to marry within the ethnic group. But even if the spouses share an ethnic heritage, they are usually not comfortable enough in the ethnic language to use it for everyday communication with each other. Therefore they will not speak it to their children, either. For an ethnic language to stay alive as a viable means of communication for a longer time than two generations would require a continuous influx of new immigrants but, as Watson (1995: 229) points out, “since the late 1970’s onwards immigration to Australia has been quite restricted, to all nationalities.” Clyne & Kipp (2006: 18) also note that the language groups “with a very low shift to English” are those that have recently arrived from Southeast and East Asia and Africa, whereas the
high-shift groups tend to be ones “for whom there is not a big cultural distance from Anglo-Australians.” Although there is no mention of Finnish Australians in Clyne & Kipp, we argue that they belong to the high-shift group.

The Finnish language in Australia is shaped by two factors, (1) isolation from the development of the Finnish language (an agglutinative one) in Finland, and (2) the powerful influence of English (an analytic language), language of the dominant culture. The former factor causes retention in Australian Finnish of some forms that have fallen out of use in Finland, and also considerable uncertainty among Finnish Australians as to what is “correct.” The latter factor causes innovation in the form of lexical borrowing and of loan translations (cf. Kovács 2001b), but also, especially in the second generation of speakers, phonological, morphological and syntactic changes. Some give up speaking their ethnic language altogether.

From the typological point of view, the following generalisations can be made on the basis of the description above. Clearly, the basic pattern is one of maintenance of the ethnic language by the Finnish immigrant generation (Adults) and the subsequent shift from Finnish to English by the second generation (Juveniles). The first generation was characterised as “marginally bilingual.” In contrast with the fluent bilinguals of the second generation, they can also be regarded as non-fluent bilinguals, or as L2 learners with some degree of L1 (Finnish) interference. The characterisation of the language contact described above implies that Finnish is linguistically dominant over English for the first generation (Adults), whereas English is socially dominant over Finnish.

Table 1 summarises the predictions that can be made about the linguistic levels affected by the two transfer types, maintenance and shift, in the transfer situations of the Adults.
Detecting Syntactic Contamination in Emigrants

Interference in Finnish Interference in English
English (L2) → Finnish (L1) Finnish (L1) → English (L2)

<table>
<thead>
<tr>
<th></th>
<th>English (L2)</th>
<th>Finnish (L1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>sl</td>
<td>→ RL</td>
<td>SL → rl</td>
</tr>
</tbody>
</table>

**MAINTENANCE**

| Lexicon  | strong       | weak         |
| Phonology| weak         | strong       |
| Morphosyntax | weak | moderate/unclear |

Table 1. The two transfer situations and the linguistic levels predicted to be affected by interference in the (Australian) Finnish-(Australian) English language contact among the Adults (cf. Lauttamus & Hirvonen 1995: 59; Thomason & Kaufman 1988, Van Coetsem 1988, 1995). ‘sl’/‘SL’ is source language, and ‘rl’/‘RL’ recipient language. The linguistically dominant language of the speech community is typed in upper case. The attributes ‘strong,’ ‘moderate’ and ‘weak’ refer to the degree of the predicted interference.

One of the two transfer situations (maintenance) can therefore be specified as *sl* → *RL*. In this situation, which is typical of the Adults, English is the source language (*sl*) and Finnish the recipient language (*rl*). Characteristic of this transfer situation is *lexical borrowing*, whereby loan words are phonologically and morphologically adapted to the patterns of the *rl*. The levels of phonology, morphology and syntax (‘morphosyntax’) of Australian Finnish spoken by the immigrant generation seem to be in general resistant to interference from Australian English. As Kovács (2001a: 98) points out, borrowed words in Australian Finnish show “complete phonological (as well as morphological and syntactic) integration into the Finnish language system.” The crucial feature is that first-generation Finnish Australians still maintain their own native language, Finnish. Since the focus of the present paper is on language shift, we will not examine the maintenance situation any further.

In the second of the two transfer situations of the first-generation Finnish Australians (shift), particularly that of the Adults, the interference from their native Finnish in their acquired English does not begin with vocabulary but with sounds (phonology) and morphosyntax. This pattern of interference, *SL* → *rl*, is characteristic of language shift. Evidence from the English spoken by first-generation Finnish Americans demonstrates that the phonological and morphosyntactic patterns often deviate from standard (American) English in the manner typical of ‘learner language’ or

The column ‘shift’ represents the levels affected by interference from Finnish in English. The English spoken by first-generation Finnish Australians is primarily affected in its phonology, to a lesser extent in its morphosyntax, while lexical interference is only weak. It is also expected that the Adults show more contact-induced effects in their speech than the Juveniles, since the former only temporarily shift to English, as in the case of an interview, whereas the latter have already shifted to English as their language of everyday communication.

The fact that lexical interference from Finnish in English is weak could be explained as follows. The restricted variety of English spoken by the Adults is almost invariably used for out-group communication only. Given that (Australian) English is socially (but not linguistically) dominant over Finnish, massive lexical interference from Finnish would be detrimental to successful communication with monolingual English speakers. The expected direction of lexical interference is thus from the socially dominant language into the socially subordinate one. As shift-induced interference is mainly phonological and morphosyntactic, we will not examine lexical interference any further.

As Lauttamus & Hirvonen (1995) argue, from a synchronic point of view the transfer situation $SL \rightarrow rl$ described above, along with other comparable interlanguage situations, contains features of shift with interference. A distinction must, however, be made between the synchronic description of the transfer situation and the actual outcome of the shift. As evidenced by Lauttamus & Hirvonen’s (1995) description, it can be expected that not only the second-generation Finnish Australians born in Australia but also the Juveniles, having received their school education in Australia, generally shift from the ethnic language to Australian English during their teen years. This enables them to become fluent bilinguals and achieve a virtually native-like competence in English. Accordingly, the column ‘shift’ in Table 1 only predicts which level of language is affected by substratum transfer from Finnish in the process of language shift among the Adults. With the two groups of speakers available, we have no evidence in our data of the exact time when the shift was completed among the Juveniles.
Given the fact that there is no evidence yet of any extensive Finnish substratum transfer in the English of the Juvenile speakers, we are led to the conclusion that second-generation Finnish Australians represent a typical case of shift without interference\(^5\) similar to that of “urban immigrant groups of European origin in the United States” (Thomason & Kaufman 1988: 120), who maintain their own ethnic languages for the first generation, while their children (and grandchildren) shift to the English of the community as a whole with hardly any interference from the original languages. The issue of shift without interference for those second-generation speakers who were born in Australia remains unresolved until the interview material is transcribed, digitised and analysed. It has been argued, however, that immigrant languages in the US last for a maximum of two generations (cf. Karttunen 1977, Veltman 1983, Smits 1996, Klintborg 1999). One aim of the present project is to investigate whether this pattern is evident in our Australian data (cf. Clyne and Kipp 2006). More generally, it appears that even members of the first generation of immigrants demonstrate a variety of achievements, including native-like ability, and that members of the second generation speak natively (Piller 2002), and that language attrition does not wait till the third generation but begins with the first generation (cf. Waas 1996, Schmid 2002, 2004, Cook 2003, Jarvis 2003). Clyne (2003: 48), for one, also suggests that a person’s higher education level may cause language shift if it results in more contact with the cultural life of the dominant group, and this is the expected pattern of behaviour of the Juveniles.

4. Detecting aggregate syntactic distance

We measure the difference in the syntaxes of the two groups, the Adult and the Juvenile immigrants to Australia, on the basis of the corpus described in section 2. We use those parts of the interviews spoken by the immigrants, and we divide this into the parts spoken by those who immigrated as juveniles and those who immigrated as adults.

\(^5\) We use the terms interference and transfer as if they were freely interchangeable. Clyne (2003: 76) suggests a distinction between transference (‘process’) and transfer (‘product’).
We apply the computational and statistical techniques described by Nerbonne & Wiersma (2006), which we summarise here for ease of reference. Readers interested in technical detail are urged to consult the study directly.

### 4.1 Assigning syntactic categories

Although automatic parsing is already producing fair results for the edited prose of newspapers, it is not a promising avenue for parsing the conversational transcripts of second language learners. Both the conversation style of the transcripts and the frequent errors of learners would be obstacles. We can, however, assign minimal syntactic categories (part-of-speech, or POS, information) to the words, using a so-called “tagger.” For this we used the TnT tagger (Brants 2000), which is freely available.

We tagged the corpora using the tagset of the TOSCA-ICE, which consists of 270 POS tags (Garside et al. 1997), of which 75 were never instantiated in our material. Since we aim to contribute to the study of language contact and second-language learning, we chose a linguistically sensitive set, that is, a large set designed by linguists, not computer scientists. In a sample of 1,000 words we found that the tagger was correct for 81.2% of 1-grams, 67.5% of the 2-grams, and 56.1% of the 3-grams. The accuracy is poor compared to newspaper texts, but we are dealing with conversation, including the conversation of non-natives.

In order to allow sensitivity to context, we collected the POS tags into trigrams, i.e. sequences of POS tags as they occur in corpora. For a sentence such as (1) *the cat sat on the mat*, the tagger assigns the following POS labels:

![](image)

---

6 Sanders (2007: 1), who compares the present approach to an approach in which the sentences of a hand-corrected corpus are represented as parse trees rather than a vector of POS tags, argues that “the trigram approximation works well, but it does not necessarily capture all the information of syntactic structure such as long-distance movement.”
And for a sentence such as (2) *we'll have a roast leg of lamb for breakfast*...(extracted from our data), the tagger assigns the following POS labels:

(2)  

\[
\begin{array}{cccc}
\text{we} & \text{ll} & \text{have} & \text{a} \\
\text{PRON(pers, plu)} & \text{AUX(modal, pres, encl)} & \text{V(montr, infin)} & \text{ART(indef)} \\
\text{leg} & \text{of} & \text{lamb} & \text{tomorrow (…)} \\
\text{N(com, sing)} & \text{PREP(ge)} & \text{N(com, sing)} & \text{ADV(ge)} \\
\end{array}
\]

These are then collected into the trigrams as follows: (a) ART(def)-N(com, sing)-V(intr, past), ..., ART(def)-N(com, sing)-PUNCT(per), and (b) PRON(pers, plu)-AUX(modal, pres, encl)-V(montr, infin),..., ART(indef)-N(com, sing)-N(com, sing),..., PREP(ge)-N(com, sing)-ADV(ge) …

We use POS trigrams as indications of syntactic structure, proceeding from the consensus in syntactic theory that a great deal of hierarchical structure is predictable given the knowledge of lexical categories, in particular given the lexical ‘head.’ Sells (1987, sec. 2.2, 5.3, 4.1) shows how this assumption was common to theories in the 1980s (Government and Binding theory, Generalized Phrase Structure Grammar, and Lexical Function Grammar), and the situation has changed little in the successor theories (Minimalism and Head-Driven Phrase Structure Grammar). Even though the consensus of twenty years ago has been relaxed in recognition of the autonomy of “constructions” (Fillmore & Kay 1999), it is still the case that syntactic heads have a privileged status in determining a “projection” of syntactic structure.

We then collect all the POS trigrams found in the corpora (13,784 different POS trigrams in the case of the Finnish Australian data), and count how frequently each occurs in both of the corpora. We then compare this 2 X 13,784 element table, investigating whether the distribution in the two rows is of a sort one might expect by chance, and, in case it is not, calculating which frequent POS trigrams are responsible for the skewed distribution. Nerbonne & Wiersma (2006) describe the use of permutation tests for this purpose, but we suppress the detailed explanation of permutation tests here. We do like to emphasise that sheer corpus size should not lead to inflated estimates of statistical significance (Agresti 1996), which we see as a virtue in our approach.
Once we have ascertained whether two corpora differ in their syntax, we naturally also wish to understand what is responsible for the differences. For this purpose we have developed software to identify which POS-trigrams contribute most heavily to the difference measured by the permutation test. We then examine the 200 statistically significant POS-trigrams that have the most unequal division across the groups (i.e. not based on their absolute frequency, but on the relative size of the difference in their frequency between the two groups). These are the trigrams with the biggest $R^2$ value, and they therefore represent the most typical ones for each group. We turn to an examination of the Finnish-Australian data below.

4.2 Discussion

By analysing differences in the frequencies of POS trigrams, we importantly identify not only deviant syntactic uses (“errors”), but also the overuse and underuse of linguistic structures, whose importance is emphasized by researchers on second-language acquisition (Coseriu 1970; de Bot et al. 2005: A3, B3). According to these experts it is misleading to consider only errors, as second language learners likewise tend to overuse certain possibilities and tend to avoid (and therefore underuse) others. For example, de Bot et al. (2005) suggest that non-transparent constructions are systematically avoided even by very good second-language learners. In a similar vein, Thomason (2001: 148) argues that learners often ignore or fail to learn certain target language distinctions that are opaque to them at early to middle stages of their learning process. It is this kind of SLA behaviour that we expect particularly of the Adults.

Some previous work, such as Poplack & Sankoff (1984), introduced techniques for studying lexical borrowing and its phonological effects, and Poplack et al. (1988) went on to exploit these advances in order to investigate the social conditions in which contact effects flourish best. We follow Aarts & Granger (1998) most closely, who suggest focusing on tag sequences in learner corpora, just as we do. We add to their suggestion a means of measuring the aggregate difference between two varieties, and show how we can test whether that difference is statistically significant.

Our work assumes, not that syntax consists solely of part-of-speech sequences, but only that differences in part of speech sequences are
indicative of syntactic differences in general. It is important to emphasize that we do not claim to have developed a measure sensitive to all conceivable syntactic differences, only a measure that correlates with syntactic differences as a whole.

Uriel Weinreich (1953: 63) noted the difficulty of aggregating over language contact effects:

No easy way of measuring or characterizing the total impact of one language on another in the speech of bilinguals has been, or probably can be devised. The only possible procedure is to describe the various forms of interference and to tabulate their frequency.

Our proposed technique for measuring the aggregate degree of syntactic difference between two varieties attempts to measure the “total impact” in Weinreich’s sense, albeit with respect to a single linguistic level, syntax.

If this measure could be validated and calibrated, it would be important not only in the study of language contact but also in the study of second-language acquisition. A numerical measure of syntactic difference might enable these fields to look afresh at issues such as the time course of second-language acquisition, the relative importance of factors influencing the degree of difference such as the mother tongue of the speakers, other languages they know, the length and time of their experience in the second language, the role of formal instruction, etc. It would make the data of such studies amenable to the more powerful statistical analysis reserved for numerical data.

5. Syntactic analysis of the two varieties of Finnish Australian English

The evidence from our syntactic analysis using the POS tagger (tag trigrams) and a permutation test described in detail above shows that there are statistically significant differences between the Adults and the Juveniles. Our report focuses first on the aggregate effects of syntactic distance between the two groups of speakers and then we move on to discussing the data on what we call ‘syntactic contamination’ in the English of the Adults.
5.1 Aggregate syntactic differences between Adults (A) and Juveniles (J)

Some of the statistically significant syntactic differences found in the data that demonstrate aggregate effects of syntactic distance can be described in general terms as follows:

1. *Overuse of hesitation phenomena* by A as opposed to J (pauses, filled pauses, repeats, false starts etc.), arising from difficulties in speech processing in general and lexical access in particular.

2. *Overuse of parataxis* (particularly with *and* and *but*) by A as opposed to hypotaxis, not only at phrasal level but also at clausal level.

3. *Underuse of contracted forms* by A as opposed to J, who use, quite fluently and naturally, forms such as *I've been running, I'd like to go, I'll finish my degree, we're very market-oriented*, whereas the Adults, while using some highly frequent contractions such as *don't* and *can't*, (occasionally) *it's* and *I'm*, mostly use full forms such as *I have been, it has been*.

4. *Differential usage of discourse markers* such as *you know, you see, I mean* by A as opposed to J in the sense that the Adults mostly use *you know* (followed by hesitation phenomena) as a time-gaining device in order to access the next lexical item rather than as a genuine discourse marker. In contrast, the Juvenile speakers use a more varied repertoire of markers, which often function as appeals to the interviewer.

5. Avoidance of *complex verb clusters* by A as opposed to J, who frequently use structures such as I would have had it, I still probably would have ended up getting married.

6. Avoidance of *prepositional and phrasal verbs* by A as opposed to J, who use verbs such as *I ran out of money, I just opted out for an operation*.

7. Underuse of the existential (expletive) *there* by A as opposed to J, who almost invariably use the default singular with the existential in examples such as *I /mean there's/ something there, you /know there's/ no ads, I /mean there’s/ no major changes*. In contrast, the Adults either underuse the existential or omit the existential in subject position (cf. section 5.2.4). The use of the default singular with *there* can be considered an English-specific angloversal (cf. Szmrecsanyi & Kortmann 2006) rather than a vernacular universal that is common to spoken vernaculars in general.
It should be remembered that we only used the POS-trigrams that were found to be statistically significant in one group as opposed to the other group, and that the top 200 trigrams that we analysed were sorted by their weight with 20 random samples from each group. We also used those POS-trigrams (which we call ‘extreme’) in which 90% of the occurrences were within the group that was investigated. The notion of avoidance does not therefore imply total absence of a feature in either group. Ellis (1994: 304–306) argues that avoidance (‘underrepresentation’) and overuse (‘over-indulgence’) can also result from transfer. Learners avoid using non-transparent L2 constructions because of the differences between their mother tongue and L2. The overuse of certain grammatical forms may also occur as “a consequence of the avoidance or underproduction of some ‘difficult’ structure” (Ellis 1994: 305). Accordingly, the overuse of parataxis in (2) by the Adults, for example, may partly result from their inability or unwillingness to produce subordinate constructions (hypotaxis).

Because our present analyses do not show whether or not the speakers involved are necessarily aware of what kind of target forms they are avoiding, we conclude that all the features above that demonstrate differential usage by the Adults are projections, not from direct contact between English and Finnish, but rather from the strategies and processes typically evinced by second-language acquirers regardless of their mother tongue. These include not only overuse, as in (1) and (2), underuse (‘underrepresentation’), as in (3) and (4), avoidance, as in (5) and (6), but also over-generalization, simplification, and false hypotheses, which all may result in deviant usage. Our findings of the avoidance of complex verb clusters (5) and prepositional or phrasal verbs (6) in the Adults are in agreement with de Bot et al. (2005), who suggest that constructions which are not immediately transparent are systematically avoided by L2 learners. 

Even though Finnish has no prepositional or phrasal verbs, and L1 influence may therefore exert itself, we argue that all these strategies and processes are best considered as second-language learners’ “universals,” and that Finnish Australians, the Adults in particular, also show them in their interlanguage.

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7 Thomason (2001: 148) argues that “errors of omission—failure to learn certain TL features—are among the most common of shift-induced interference features.”
On the basis of the analysis above, we contend that the statistical evidence obtained from our data indeed reflects syntactic distance between the two varieties of English and, consequently, aggregate effects of the difference in the two groups’ English proficiency. We also argue that the juvenile shifters, having no demonstrable syntactic contamination in their speech, must have already shifted to English as their language of everyday communication. The evidence above indisputably shows a differential shift to English in the two groups of speakers, the Adults (still) showing features of ‘learner’ language, and therefore those of ‘temporary’ or ‘partial’ shift, whereas the Juveniles those of shift without interference, having English as their linguistically and socially dominant language.

5.2 Syntactic contamination in the English of the Adults

In the following sections, we will be looking for a potential answer to the question of whether the observed syntactic deviations from the norms of standard (acrolectal) English should be ascribed to contact effects from a Finnish substratum, to more universal, ‘natural’ tendencies in non-standard varieties in general, or to other factors. Potential roles of these factors will be assessed when we analyse the syntactic contamination in the English of the Adults in more detail in the sections below. We admit, however, that our discussion does not exhaust even the kinds of explanations that are customarily examined for apparent “contact” or “second-language learner” effects. For example, we do not examine hypotheses about Chomskyan universals and their applicability to second language learning or hypotheses about potential processing constraints in any detail.

Filppula et al. (2006), for example, suggest that so-called ‘vernacular universals’ (Chambers 2004) and contact-induced patterns form a continuum, having at one end universal features where the case for contact is weak; at the other end are features where the role of contact is obvious and indisputable. In other words, we are concerned with a continuum varying in the degree to which the hypothesis can be explained without risking an alternative. Some features that are found in the data seem to represent the dominance of a (vernacular) universal over contact influence, such as the default singular in (7) above and absence of the copula be (in section 5.2.3), while others may be explained in terms of both factors, and there may still be other features that are contact-induced.
Features that support the theory of vernacular universals (Chambers 2004: 128–129; cf. Filppula et al. 2006) are, in addition to default singulars (subject-verb nonconcord), -n’ in the present participle, morpheme-final consonant cluster simplification (pos’office, han’ful), final obstruent devoicing (hundret for hundred), and conjugation regularisation or leveling of irregular verb forms (Mary heared the good news), multiple negation or negative concord (He didn’t see nothing) and absence of the copula (We going as soon as possible). We realise, of course, that most of these features recur ubiquitously all over the world, even outside of vernacular, e.g. in “child language, pidgins, creoles, and interlanguage varieties” and that they “cannot be merely English” (Chambers 2004: 128f.: italics ours).

We note that the theory of vernacular universals may, in fact, explain some of the constructions that we find in the data elicited from some of the Adult informants. For example, two different Adult speakers use the past form doed (‘did’) of the verb do, as in when they get that, they doed whatever they like (doed ‘levelling’ of the irregular past tense form of the verb do). Three different Adult speakers also use the verb form doned (‘done’ + ed), as in They all doned here, they, - they wasn’t raw [kangaroo] skin. The same example also shows absence of the copula be (‘they were all done here’) and subject-verb nonconcord in they wasn’t (‘they weren’t’), which are all candidate vernacular universals. In non-acrolectal Finnish, subject-verb nonconcord is also frequent, e.g. ne meni Groningeniin (‘they went to Groningen,’ ne, plural of se ‘it,’ + meni ‘went’ 3rd person sg), which shows subject-verb nonconcord in person and number, as opposed to standard Finnish: he menivät Groningeniin (he ‘they’ + meni+vät ‘went’ + 3rd person pl). Similarly to some vernacular Englishes, also non-acrolectal Finnish violates the standard subject-verb concord rule.

To support a potential role of the ‘vernacular’ approach in our analyses, we refer to Fenyvesi & Zsigri (2006: 143). They suggest that less educated speakers of English (such as the Adults), who have usually learnt their L2 via listening, rely on auditory input, whereas more educated immigrant language speakers (such as our Juveniles), who have acquired their L2 also through reading and writing, and therefore exposed to a more or less codified standard (acrolectal) variety, rely on visual input as well. The fact that the Adults have mainly been exposed to spoken, basilectal (Australian) English is likely to give rise to some general vernacular features.
The data relevant to our present syntactic analysis will be discussed from the point of view of both types of explanation, contact-induced and “universal.” The following sections deal in more detail with some of the statistically significant syntactic differences that we find recurrent in our data, i.e. features of disfluent speech, article usage, omission of the primary verb *be* (together with the alleged vernacular universal –*n*’ in the present participle), omission of *there* and *it*, absence of prepositions, deviant word order, position of the negator *not*, and a few others that we find interesting. The data to be analysed in the sections below were elicited from the clusters of POS-trigrams which had a similar constituent structure and which were shown to have statistically significant differences between the two groups of informants.

### 5.2.1 Disfluent speech

As pointed out in section 5.1, the Adults demonstrate typical features of disfluent speech (hesitation phenomena), such as (filled) pauses, repeats, false starts, repairs, incomplete or false syntactic structures, arising from difficulties in speech processing, and particularly in lexical access. Some of the trigrams, marked by ‘/’ and embedded in their respective contexts, are exemplified in (3) to (7):

(3) skin cancer and /um and uh/ and gene general

(4) but /ah I I/never been on

(5) clubs spades /hearts and uh/ uh cl oh [probably trying to access ‘diamonds’]

(6) (he) was a leading-hand um /leading-hand and ah/ last last last

(7) as in /a in a/ Finland because especially

Features of disfluent speech are overwhelmingly the most frequent characteristics that distinguish the Adults from the Juveniles. They can occur at any syntactic boundary but mostly before nouns. They are, of course, typical of any kind of speech, native and non-native alike, but certainly more frequent in interlanguage or, more generally, in second
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Language acquisition (shift) where speakers demonstrate imperfect learning as they study an L2. In this view, then, features of disfluent speech may be seen as “second-language learners’ universals.” Evidence from the English spoken by first-generation Finnish Americans also shows similar patterns, but different from standard (American) English, in the manner typical of ‘learner language’ (cf. Pietilä 1989: 152–189; Hirvonen 1988, 1995). Pietilä (1989: 221) found a very significant difference between her elderly and younger adults in the use of hesitation phenomena, and we argue that the excess (overuse) of these reflects the Adults’ lesser proficiency in English (cf. Lauttamus 1999: 105). Difficulties in controlling pause duration and placement seem to be common among all second-language learners irrespective of the target language. Paananen-Porkka (2007) argues that pausing, including filled pauses such as those in (3), (4), (5), and (6), seems to be the main source for the anomalies that she found in her investigation of English speech rhythm by Finnish comprehensive school students.

5.2.2 Article usage

The Adults also demonstrate overuse (and underuse) of the two articles, *a(n)* and *the*, characteristic of a learner whose L1 has no article system (such as Finnish), as exemplified in (8) to (12):

(8)  *in that time /in a Finland/ because wasn’t very*

(9)  *first we go /to the Finland/

(10)  *we been /in a Brisbane/ Brisbane because ah*

(11)  *in /the Brisbane and/

(12)  *I had /a different birds/ in Finland*

Example (12) shows that the indefinite article is sometimes used with a plural, countable noun head. The fact that the Juveniles do not show similar linguistic behaviour implies that they are not only more proficient in their
English but also in their later stages of acquisition (language shift) than the Adults.

Evidence from the English of Finnish Americans also suggests that the overuse of the articles, particularly that of the indefinite article, is rather common in conjunction with proper nouns. Pietilä’s (1989: 167–168) data show that it is the redundant definite article, as in (9) and (11) rather than the indefinite one, as in (8) and (10) that is used by Finnish Americans, especially by the elderly first-generation speakers. Pavlenko & Jarvis (2002: 207) show that most of the L1-influenced article errors committed by Russian L2 users of English were omissions and that only a few involved oversuppliance of the definite article. (Similarly to Finnish, Russian has no article system.) Pietilä’s (1989: 165) data also suggest that most of the article errors committed by the first-generation Finnish Americans are omissions, which Thomason (2001: 148) considers to be among the most common of shift-induced interference features.

In Finnish, some of the functions of the articles are expressed, for example, in terms of case assignment, e.g. *luin kirjaa* (‘I was reading a book’; *kirjaa* partitive sg), as opposed to *luin kirjan* (‘I read the book’; *kirjan* genitive sg). A frequently used variant of the example *luin kirjan* reads as *luin sen kirjan* (‘I read it+GEN book+GEN’). The use of *se(n)* makes the reference explicitly definite and specific. (Some linguists therefore argue that *se* represents an article that is developing in Finnish.) In this vein, the Adults also show overuse of the demonstrative pronouns *this* and *that* to mark definiteness instead of the definite article:

(13) it’s /this taxation is/ really something in Finland

(14) I watch /that ah news/ and ‘Current Affair’

In the contexts where we found trigrams such as these there is no apparent need to use the demonstratives. We note, however, that in a potential Finnish variant of (13), *juuri tämä verotus (…) Suomessa…(‘[it’s] the very taxation (…) in Finland’) it would be quite acceptable to use the demonstrative *tämä* ‘this’ to make the reference not only definite but also specific. There may be an uncertainty among the Adults as to expressing the distinction between definiteness and specificity in English, so that they rely on the use of the demonstrative in specific reference. It seems, then,
that the overuse of the demonstratives by the Adults may originate from Finnish substratum transfer. This is supported by the fact that some Adults also overuse *that one* in expressions such as *I don’t /remember that one/ either, I can’t /explain that one/, I can’t really /compare that one/*, where the NP *that one* has more or less the same function as the pronoun *it*.

To summarise, it seems to us that the deviant usage of the articles in the English of the Adult Finnish Australians can be ascribed to substratum transfer from Finnish (which has no article system to express (in)definiteness and specificity), and that it may best be described as indirect functional (shift-induced) interference. Because Finnish does not have articles, the absence of this structural feature in the mother tongue can be interpreted as evidence against L1 transfer in L2 (cf. Arabski 1979). However, we agree with Ellis (1994: 306–315), who strongly argues that the absence of a feature in the first language may have as much L1 influence on the second language as the presence of a different feature. In addition to contact-induced effects, it appears that general *hypercorrection* (or overgeneralisation), common in ‘learner’ language, may be a contributing factor. In this light, an uncertainty of article usage in speakers whose L1 has no articles is “universal.” Overuse of the definite article is also common in some Celtic-influenced varieties of English and extraterritorial Englishes (cf. Filppula et al. 2006).

### 5.2.3 Omission of primary (copula) *be*

Omission also of the primary verb *be* in the progressive (present and past) is frequent in the Adults as opposed to the Juveniles, as exemplified in (15) to (17):

(15) *when we /drivin’ in the/ road*

(16) *no I just /workin’ for seven/ oh eleven*

(17) *fifteen years ago /we drivin’ round/*

Absence of the copula *be* is one of the alleged vernacular universals (Chambers 2004). We agree that it can be better ascribed to more universal properties of the language faculty rather than to substratum transfer from
Finnish, even though Finnish has no similar formal contrast between the progressive and non-progressive aspect. Learners often leave out unstressed elements (such as the primary verb *be* above) because they do not simply perceive them and, consequently, cannot process them. This explanation is supported by the evidence from Fenyvesi & Zsigri (2006), who strongly argue for the crucial role of perception in unstressed syllable deletion in loanwords (cf. Kenstowicz 2001). Working in the framework of Optimality Theory, they suggest that in languages such as Finnish and Hungarian where primary stress always falls on the first syllable “phonic content preceding the stressed syllable may not be interpreted as part of the prosodic word” (p. 137). We note that in Finnish the word boundary always precedes primary stress, and if the onset of a word (such as *be* above) is not marked by stress, it is difficult, if not impossible, for a native speaker of Finnish to interpret the prosodic word. The suggestion that less educated speakers of English such as the Adults rely on auditory input (Fenyvesi & Zsigri 2006: 143) might also explain why the omission of other generally unstressed closed-class items is so frequent among first-generation speakers.

The English progressive form, as in (15) to (17), is rather difficult for native speakers of Finnish. This is supported by the evidence in Pietilä (1989: 180–181), who notes that the most frequent verb form error in the English of the first-generation Finnish Americans is the omission of the primary *be* in the progressive. To express the Finnish progressive aspect, native speakers of Finnish mainly use the simple present. The alternatives include a construction with a finite form of the verb *olla* ‘be’ followed by the third infinitive of the main verb in the inessive case, e.g. *Olin jo nukkumassa kun soitit.* ‘I was already sleeping when you called’ (literally ‘I was already in sleeping’). Even though the formation and the use of this construction somewhat resemble those of the English *be* + *-ing* construction, it is unlikely that there should be any positive substratum transfer from Finnish to aid the use of the English progressive. From a perceptual point of view, we are tempted to believe that the use of the present participle form –*ing* alone is salient (‘marked’) enough to enable Finnish speakers of English to interpret the desired function of the progressive and mark the formal contrast between the progressive and non-progressive (cf. Opas-Hänninen et al. 2005).
In (15) to (17), the Adults also demonstrate the vernacular (basilectal) substitution of the alveolar nasal [n] represented by –n’ for the standard (acrolectal) velar nasal represented by –ng. This substitution, frequently attested in many vernacular varieties of English, can therefore be accounted for in terms of the theory of vernacular universals rather than in terms of transfer from Finnish. However, since the standard (acrolectal) English velar nasal in final position of the word violates the (standard and vernacular) phonological rule of Finnish that does not allow velar nasals in that position, the substitution in question can also be explained in terms of Finnish substratum transfer.

5.2.4 Omission of existential there and anaphoric it

Omission of the existential (expletive) there and the anaphoric it in subject position is also frequently attested in the English of the Adults. Some cases are exemplified in (18) to (20):

(18) and summer /time when Ø is/ a people
(19) but not often /wine if Ø is/ some visitors come
(20) I don’t like that /meat because Ø is/ I think

Based on the contexts that these examples occur in, the speaker in (18) is apparently aiming at ‘when there is/are people’; in (19) ‘if there is/are some visitors coming,’ and in (20) ‘because it is (meat).’ The examples in (18) and (19) can be explained in terms of substratum influence from Finnish, which would assign the subject argument of the copula verb be to the NP (a) people in (18), and to the NP some visitors in (19), and, consequently, would not mark the subject in the position before the copula. In (20), the absence of it is harder to explain since a pronoun would also be expected in Finnish. It may be attributed to a more universal look-back mechanism of the language faculty (Chambers 2006), so that the ‘meat’ that the missing ‘it’ would refer to is simply not repeated because it is already explicit in the linear order of the utterance and registered in short-term memory.
5.2.5 Absence of prepositions

The Adults tend to leave out prepositions with motion verbs such as move, go, come, as exemplified in (21) to (23):

(21) and they move me /other room where/

(22) must go /work and uh/

(23) when we /came Australia that/

Similar examples can be found in the speech of first-generation Finnish Americans (Pietilä 1989: 172–173). In expressing spatial relations with motion verbs, many vernacular varieties of English tend to leave out prepositions (cf. e.g. Linn 1988). This suggests that omission of prepositions may be a more general tendency, particularly with motion verbs such as those above, which intrinsically describe movement towards a location. It is also possible to propose Finnish substratum transfer to explain the omission in (21) to (23), i.e. lack of prepositions in Finnish. This argument is not, however, as convincing as it was in the case of Jarvis & Odlin (2000), who show that a prepositional choice that is not found in Swedish speakers of English is used by Finnish speakers of English in an example such as Chaplin and girl sat to grass. This kind of usage of the preposition to corresponds to the Finnish allative case inflection on nurmikolle (‘to grass’).

5.2.6 Deviant word order

The Adults also demonstrate deviant word order, particularly with adverbials, which are often placed before the object, as exemplified in (24) to (27):

(24) I /don’t like really/ any old age

(25) I don’t /watch any more/ that one

(26) they /don’t have maybe/ enough money
The pre-object placement of the equivalent adverbials in Finnish would be quite acceptable, and therefore we argue that it is contact-induced (shift-induced). Learners simply project their L1 structure (native word order potential) onto L2 patterns in constructing their version of L2 grammar. Pietilä (1989: 187–188) reports that elderly first-generation Finnish American L2 users of English have rather few word order errors, and that the most frequent type of error is the incorrect placement of the adverbial. Similarly to Finnish Australians and Americans, Russian L2 users of English also commit L1-based word order errors most of which involve adverbial placement (Pavlenko & Jarvis 2002: 208).

In example (27), discussed earlier in section 5.2.3, the time adverbial fifteen years ago is placed in pre-subject position. This is a feature that can be ascribed to Finnish substratum transfer as well, since in Finnish a time adverbial often appears in this position, without placing the focus on an adjunct. In English the example is well-formed, but our statistical analysis demonstrates that the Adults used this much more than the Juveniles, whose English is native or near-native. We conjecture that the Adults are overusing this construction because they neglect its pragmatic conditioning. This is in agreement with some other studies which show evidence for substratum transfer involving focus structures that are communicatively motivated (cf. Odlin 2006a: 28). Since trigrams may not be ideal data to account for some contextual effects such as focus placement, more evidence from our corpora is certainly needed to corroborate this.

More generally, Odlin (1990: 107) argues that “there is no universal constraint on the transfer of basic word order” and that speakers from different backgrounds tend to display a preference for different word order patterns that directly reflect their L1s. He also argues that there is relatively little evidence for basic word order transfer in the literature because of the relative lack of study on beginning learners. Our data on the Adults, who are less exposed to English and rely more on their L1, and in whom word order transfer from Finnish is therefore more likely, indeed demonstrate more transfer effects on their English than the Juveniles.
5.2.7 Negator *not* in pre-verbal position

The Adults produce utterances where the negator *not* is placed in pre-verbal position, as exemplified in (28) to (30):

(28) *but uh/we not cook/ that way (without the primary verb do)*

(29) *I’m diabetic I/not can eat/ them*

(30) *not can say/not can say I not want*

This can be ascribed to Finnish substratum transfer (shift-induced interference), because Finnish always has the negative item (*ei*, inflected in person and number like any verb in standard Finnish) in pre-verbal position (as in 29 and 30, before the modal *can*). Although a substrate explanation may seem self-evident in (29) and (30), examples similar to (28) can be found in other non-standard varieties of English, e.g. in Spanish interlanguage English: *I no understand*, probably modeled on standard Spanish (*Yo* *no entiendo*) (Odlin 1989: 104–110). Examples (28) to (30) represent a developmental sequence described by Larsen-Freeman & Long (1991: 94) as ‘internal pre-verbally negated strings,’ which are common not only in Finnish but in learners of English from typologically different L1 backgrounds and therefore provide powerful evidence for language universals guiding, at least in part, interlanguage development. As Ellis (1994: 99-101, 421–422) points out, “there is strong evidence that in the early stages of L2 acquisition learners opt for preverbal negation, even where the L1 manifests postverbal negation” (p. 421). In agreement with Larsen-Freeman & Long (1991: 106–107), we argue that L1 transfer occurs in parallel with general developmental processes, and it may strengthen the use of “a developmental form similar to an L1 structure” (such as a Finnish pre-verbally negated string).

5.2.8 Misuse of *what* as a relative

The misuse of the pronoun *what* as a relative pronoun or complementiser (31) by the Adults in (31) to (34) can be ascribed to substratum transfer from Finnish, where *mikä, mitä* sg ‘what’ or *mitkä* pl ‘what’ are used as
interrogative pronouns or relative pronouns, but only in some restricted contexts as a relative, e.g. *kaikki, mitä tiedän* ‘all (that) I know.’

(31) *(it) was about twenty-five /minutes what they/ kept that balloon (that)*

(32) *(name) for other /games what we/ played (that or which)*

(33) *cars and all /machines what they/ built*

(34) *those Aussie /dishes what they/ eating*

We have not found a similar use of *what* as a relative in the ‘Juveniles.’ We argue that this usage of *what* as a relative is overgeneralised on the model of Finnish, even though we know that it is found in some substandard English.

### 5.2.9 Overuse of simple present

The Adults also extend the simple present (as opposed to the past tense and the progressive) to describe not only present but also past or future events, as exemplified in (35) to (38):

(35) *okay /we stay here/ we not go* (‘we’ll stay here, we’re not going’)

(36) *but /we wait till/ the ambulance come* (‘we waited/were waiting till the ambulance came’)

(37) *where /we live before/ this place* (‘where we lived before this place’)

(38) *when /we come in/ Australia* (‘when we came to Australia’)

This can be partly ascribed to Finnish substratum transfer, as Finnish has no equivalent progressive forms or ways to express future events in its repertoire and mainly uses the simple present in these functions (cf. section 5.2.3). Pietilä (1989: 176) also reports on the frequent use of the simple present to express past actions in the English of first-generation Finnish Americans. The fact that the present tense is used by the Adults in
reference to past events in (36, 37, 38; the use of the forms confirmed in their respective contexts) may also be explained in terms of a more universal tendency found in vernaculars to regularise morphology (‘one form for all functions’). Some of the verb forms in the trigrams in (35), (36) and (38) are good examples of how our technique, which is sensitive to frequency differences, detects deviations that are not, strictly speaking, errors.

5.2.10 Terms of measurement

Both groups (A and J) almost invariably use the plural in the marking of nouns of measurement: five miles; (a) hundred dollars; two hours (noun as head of NP). We only found one example of the use of the singular: three foot wide standing up, which is, of course, also acceptable in standard (acrolectal) English. The use of the plural is also the default with plural quantifiers: a couple of weeks, a few plays.

The use of the plural as opposed to the singular is rather surprising because in many vernacular (non-standard) varieties of English the singular head is widely used because the singular apparently carries less cognitive cost; a notionally plural numeral already marks a phrase plural. The fact that we found little evidence of the singular is even more surprising because Finnish uses the singular in parallel cases: viisi tuntia ‘five hours’ (tuntia partitive sg), kaksi viikkoa ‘two weeks’ (viikkoa partitive sg). Our findings may partly be explained by the fact that native speakers of Finnish are used to assigning inflection to the head of an NP (the partitive sg case [viikko+a], instead of the nominative sg [viikko]) for measurement and that the English -(e)s plural is apparently more salient phonetically (perceptually) than many other morphological endings.

5.2.11 Acquired formulae

There is also statistically significant evidence that the Adults have acquired some formulae such as that’s and what’s, as exemplified in (39) to (43):

\[(39)\quad \text{ah /that’s is/ not my occupation}\]
That’s and what’s, acquired as fixed phrases, have apparently been processed as single elements. We also found examples such as what’s a that sign, what’s a that seven or something. Ellis (1994: 20), for one, argues that learners often produce formulae or ready-made chunks as their initial utterances. Acquired formulae cannot be ascribed to substratum transfer, as they tend to be recurrent in any interlanguage.

6. Discussion: contact-induced or universal?

In our syntactic analysis of the English of the Adult speakers of Finnish emigrants to Australia we have shown that a number of features that we describe as ‘contaminating’ the interlanguage can be attributed to Finnish substratum transfer. These features include (1) overuse (and underuse) of articles, (2) omission of the expletive there, (3) absence of a preposition such as to with motion verbs, (3) deviant word order with adverbials, (4) use of the negator not in pre-verbal position, (5) misuse of what as a relative or complementiser, and (6) overuse of the simple present to describe past and future events. What makes our argument for the role of contact somewhat less convincing is that almost all of these ‘deviant’ features might also be ascribed to more “universal” properties of the language faculty. However, our findings support other empirical evidence (reviewed, for example, by Larsen-Freeman & Long 1991: 96–113, and Ellis 1994: 299–345) that shows how the learner’s L1 influences the course of L2 development at all levels of language, although transfer seems to be more conspicuous in phonology, lexis and discourse than in morphosyntax.

Nonetheless, there are other features in our data that may be ascribed to more “universal” primitives, such as the absence of the copula be, substitution of the –n’ for –ng in the present participle, regularisation of morphology (use of the present tense form to describe past and future
events), and use of the default singular with *there* (by the ‘Juveniles’), or to “language learners’ universals,” such as the overuse of hesitation phenomena, overuse of parataxis, underuse of contracted forms, and avoidance of complex verb clusters, prepositional and phrasal verbs. Since we have no evidence of potential contamination in the English of the Juvenile speakers at the early stages of their L2 acquisition, we are simply not in a position yet to prove or refute our hypothesis about the strength of contact influence as opposed to that of the other factors. The “high shift” to English (Clyne & Kipp 2006: 18) by the Juvenile speakers, without interference from Finnish, seems to support our argument that most of the features that we found in the data elicited from the Adult speakers appear to be temporary, even ephemeral, and have no permanent impact on the English of second-generation Finnish Australians. This is in agreement with the idea proposed by Larsen-Freeman & Long (1991: 107) that “beginners” (such as the Adults), who rely more on their L1 because of the limitations imposed on them by their L2, are initially more willing to transfer items from their native language.

7. Conclusion

In this paper we argue that using frequency profiles of trigrams of POS categories as indicators of syntactic distance between two different groups of speakers we can now give an estimate of the “total impact” of L1 on L2 syntax in SLA. Our findings show syntactic ‘contamination’ from Finnish in the English of the Adult first-generation speakers of Finnish ethnic origin. Some of the features found in the data can be explained by means of contact-induced influence whereas others may be primarily ascribed to ‘learner’ language or to more universally determined properties of the language faculty. In contrast with the Adult speakers of the first generation, the Juvenile speakers of the second generation, who acquired English much earlier, demonstrate a native or near-native command of English. This is in accordance with Riehl (2006), and many others, who point out that age (of onset) is a crucial determinant of successful L2 acquisition.

Our syntactic analyses of the two varieties of Finnish Australian English therefore strongly support the idea that language *shift* to English has already taken place among the majority of the Juvenile speakers as opposed to the Adult speakers, who still demonstrate typical morpho-
syntactic features of *temporary shift* and *imperfect learning* of English. We conjecture that the higher education level of the Juveniles in the language and culture of the dominant group may have accelerated language shift even further (cf. Clyne 2003: 48). Although we have a third corpus of the English of second generation speakers of Finnish ethnic origin born in Australia, our findings of the variety of English spoken by the Juvenile informants suggest that the corpus in question would not provide us with any deeper understanding of the general language development of the Finnish immigrant groups in Australia. We infer from the data of the Juveniles that potential residues of syntactic ‘contamination’ in the English of second-generation speakers can only be found by observing them systematically from the very inception of their L2 acquisition process up until they go to school, and that without any longitudinal study of their English we are unable to capture or intercept potential shift-induced transfer effects in progress.

**References**


DTECTING SYNTACTIC CONTAMINATION IN EMIGRANTS


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Abstract

On the basis of corpus data, it is suggested that a prototypical Finnish idiom is a verb phrase consisting of idiom-prone words, especially basic verbs and body part nouns. The Finnish data indicates that idioms—albeit syntactic phrases—also play an important role in lexicalization, not through the regular lexeme formation processes, i.e. derivation and compounding, but through using idiom constructions with case and/or number inflections, with a relatively simple morphological structure and prototypical simplex words.¹

1. Introduction

Idiom has traditionally been a term that eludes an explicit definition. There are four features, among which there seems to be a consensus among most scholars, although, to some extent, they are all on different conceptual levels (see also Langlotz 2006: 3). First, idioms are multi-word syntagms. This feature is a linguistic convention in order to rule out, for example, compounds and monomorphemic words that are also arbitrary by nature (Hockett 1960: 173). Second, idioms are non-compositional. Non-compositionality can mean—besides the fact that the meaning of an expression is not decomposable on the basis of the meanings of its parts—also that the form of the expression may not be isomorphic with the referential form (Geeraerts 1995). Third, idioms are regarded as morphosyntactically and/or lexically restricted. However, this feature is always based on post hoc analyses. Finally, in certain aspects idioms are always conventional in a sense that they are institutionalized (for institutionalization, see also e.g. Brinton and Traugott 2005: 45–47). These conventions may be (relatively) fixed meanings or structural conventions, i.e., construc-

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tional idioms (Booij 2002, Penttilä 2006). The same conventions must also rule the formation of new idioms: we—both as language speakers and as linguists—must recognize them as idioms and separate them from other, non-idiomatic expressions. (For difficulties in defining the concept of idiom, see also e.g. Wood 1986, Moon 1998, Čermák 2001, Taylor 2002, Langlotz 2006).

According to the criteria above, we can define a **prototypical** idiom—a multi-word, non-compositional, fixed lexical unit whose meaning is institutionalized (see also Häkkinen 2000: 8–10). Prototypical units of language have been studied mostly with respect to lexicon and grammatical categories (e.g. Rosch 1978, Taylor 1998, 2003). We may, however, also take advantage of the prototype theory when studying larger linguistic units such as phrasal idioms. Not every idiom can be called prototypical, although it fulfills the conditions mentioned above, because a prototype usually refers to a basic level category. In order to exploit the prototype theory, we must find the conceptual core of the category of “idiom.” In this respect we have to turn to the data: it seems that there are certain kinds of words and structures that are typical of idioms, as we will see below in the Finnish data.

1.1 A brief overview to the Finnish lexicon

As regards lexicon, Finnish language is fairly transparent—at least phonologically if not always semantically—and it is relatively easy to separate the stems from the endings. Moreover, Finnish morphology is extremely rich: nouns have 15 cases and tens of derivative affixes, not to mention compounding that is highly productive as well. And verb morphology is even richer (see e.g. Karlsson 1983: 356–357, Hakulinen et al. 2004: 106–422).

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2 A prototype can be understood in at least three ways (Taylor 2003: 63–64): a) as a specific instance of a category; b) as a specific kind of entity (on this approach, a particular entity instantiates the prototype); or c) as an even more abstract notion, which captures the conceptual ‘centre’ of the category. In this study, the concept of prototype is placed somewhere between b and c.

3 Prototypicality and idiomaticity have been studied by Akimoto (1992), who suggests that in verb phrase idioms complement nouns lose their prototypical meaning and even their prototypical nouniness. In a more recent paper, Akimoto (1994) discusses typical idioms in certain languages and regards body part noun idioms as universals, mostly occurring in the V+O pattern, a notion that is also the gist of this study.
Figure 1 presents a schematic overview of Finnish lexical units, based on the ratio of the type frequencies of basic words, derivations and compounds calculated from the largest Finnish dictionary, *Nykysuomen sanakirja*, which contains ca. 201,000 entries (according to Niemikorpi (1991: 154), the ratio for basic words, derivations and compounds is 8.6 : 26.6 : 64.8, respectively). If the ratio were sketched on the basis of token frequencies, the size of the circles in Figure 1 would naturally be the opposite, since basic words are the most frequently used in a language, whereas the textual frequency of compounds is usually relatively low. The two-sided arrow at the bottom represents the morphological complexity of lexical items, from monomorphemic words to structurally complex phrasal units.

![Diagram of Finnish lexicon structure](image)

**Figure 1.** The structure of Finnish lexicon in a nutshell.

Traditionally, in addition to single words, also the derivative and inflectional endings are located in the lexicon, which serves our purposes in describing the current Finnish lexical system. Naturally, the modules in Figure 1 overlap, since, for example, most of the derivations derive from basic words, while some of the opaque derivations have become basic words. Compounds, the largest group in the Finnish lexicon, may contain basic words and derivations as well, and many compounds are also derivable. The “idioms” circle is marked by dotted lines, since, so far, we neither know the size nor the structure of the idiom proportion accurately.
In the following sections, our aim is to look deeper into the lexical and morphological structure of Finnish idioms.

1.2 The Finnish data

The Finnish data presented here were originally collected for a PhD study (Nenonen 2002) on Finnish verbal idioms. The data are collected from various sources, mainly from three different text corpora:

a) The literary corpus, a sample of written Finnish fiction (10 juvenile books, approximately 100,000 running words, for references, see Nenonen 2002: 138) was read through and around 3,000 verbal idioms and noun phrase idioms were manually collected, in order to collect a relevant sample of relative frequencies and typical vocabulary patterns of Finnish idioms. The juvenile books were chosen as test material because they were assumed to consist plenty of colloquial expressions and therefore idiomatic material.

b) The Karjalainen Corpus, Karjalaisen korpus, a 34.5-million-word token computer-based newspaper corpus of Finnish, based on the newspaper Karjalainen (vols. 1991–1998, Joensuu, Finland), was used in collecting frequencies and meanings of the individual idiom-prone words. The typical idioms collected from the literary corpus were studied more closely by means of the Karjalainen corpus, using corpus and database tools (Laine and Virtanen 1999, designed for collecting frequencies; Virtanen and Pajunen 2000, designed for concordance and collocation analyses). Also the most idiom-prone words were separated and investigated more closely.

c) The Finnish Language Bank, Kielipankki, (http://www.csc.fi/kielipankki), contains over 100 million words, including also the Karjalainen Corpus. The other large Finnish text corpora of Kielipankki have also been used for help in finding examples of particular idioms and idiom-prone words.

d) Moreover, several Finnish dictionaries have been instrumental, especially in collecting body part noun idioms and studying the different meanings of basic verbs (for detailed information, see Nenonen 2002: 137).

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4 Verbal idioms cover both verb phrase idioms, i.e. a verb + complement(s), and idioms that consist of a subject + a predicate + an open place for a complement, see also fn. 5 below.
2. Prototypical Finnish idioms

On the basis of a sub-corpus of 3,066 idiom tokens manually collected from the literary corpus, it seems that the most typical Finnish idiom is a verb phrase idiom that usually consists of a finite verb (or an infinitive) and one or more complements,\(^5\) as in (1). Another typical group, noun phrase idioms, does not necessarily include a specific verb. Typically, a noun phrase idiom complements a verb phrase, like (2), which is usually realized as a predicative with a copula, or like (3), which may appear with various verbs.

(1) \textit{potkaista tyhjä-ä}
\hfill
take kick empty-PTV
‘to die,’ a common Finnish idiom for \textit{kick the bucket}

(2) \textit{helppo nakki}
\hfill
easy wienie
‘an easy thing to do, a piece of cake’

(3) \textit{naki-t silm-i-llä}
\hfill
cold wienie-PL eye-PL-ADE
‘heavily drunk’

In addition to these typical groups, there are also “other idioms,” which do not fit either of these classes, e.g. sentence-like idioms and multi-word interjections. Table 1 presents the distribution of types and tokens of different type of idioms in the literary corpus.

\(^5\) Sometimes also a subject and a verb with an open place for a complement is possible (Vilkuna 1989: 157–176; for some other languages, see e.g. Reichstein 1973, Nunberg et al. 1994: 525, Fleischer 1997: 99–103, O’Grady 1998: 287–299). However, the typical word order in these idioms is \texttt{COMP + V + N}, e.g. \textit{Minu-lta menee hermo-t}, I-ABL go-3rd nerve-PL, literally ‘from me go (disappear) the nerves,’ ‘I’m losing my nerves,’ where ‘losing one’s nerves’ is the actual idiom, and ‘nerves’ is the subject of a clause. Often this idiom type belongs to an experiencer construction (see also examples (9–10) below).
Table 1. Idioms collected from the literary corpus (100,000 running words, Nenonen 2002: 54).

Since the corpus is highly restricted, most of the idioms appear only once, as we see in Table 1. This is not surprising—in general, the textual frequency of idioms is rather low (Moon 1998: 60, Biber et al. 1999: 989). In fact, only six idioms and five constructional idioms appeared in the literary corpus ten times or more (Nenonen 2002: 55; for constructional idioms, see Chapter 2.4. below). However, even the present small sample of corpus data indicates that some words (and also some grammatical categories) are especially idiom-prone (for corresponding English data, see Moon 1998: 75–87). The next section will offer a closer look at these words.

2.1 Idiom-prone words

The term idiom-prone here is adapted from Taverner’s (1977) definition: idiom-prone words are productive in a sense that they appear in several idioms, highly frequent in large text corpora, and, moreover, they are polysemous. These words include the basic verbs and body-part nouns that will be discussed in detail below.

The most common verbs are all so-called basic or nuclear verbs (Newman 1996, Stubbs 1986). According to Stubbs (1986: 105), nuclear words are pragmatically neutral; they are less specialized in meaning and can thus occur in a wide range of contexts and collocations. It is noteworthy that the aspects that are characteristic of basic words, i.e. generality of meaning, frequency of use and simplicity of form, bring basic words closer to function words (for differences of functional and lexical units in language, see e.g. Biber et al. 1999: 55).

On the one hand, basic verbs are clearly lexical words: they have a lexical meaning, they show morphological variation, they are heads of phrases, they belong to an open class, and their number (as verbs in
general) is large. On the other hand, basic verbs are close to grammatical words in a sense that they are frequent and short, their number is small compared to verbs in general, and they are lexically rather empty *per se*, because the prevailing meaning is context-dependent. This means that basic verbs may be grammaticalized, which increases the generality of meaning; in the purest fashion, they represent only the basic semantic features of their domains (Bybee et al. 1994: 9).

In addition to verbs, some nouns prove to be idiom-prone as well. Especially the most common **body part nouns**— which refer to the most prototypical body parts—tend to appear in idioms: according to the corpora and Finnish dictionaries, *pää* ‘head,’ *silmä* ‘eye,’ and *käsi* ‘hand’ are the most common body part names in idioms (see also Akimoto 1994, for the same phenomenon in Japanese, English, French and German, Nenonen 2002, for Finnish, Niemi 2004, for Swedish, and Mulli 2007, for German).

Not unexpectedly, a typical Finnish phrasal idiom is a verb phrase that consists of a basic verb and an inflected noun, as in examples (4–6). The examples below are chosen so that every complement is in the illative case but the meaning of the phrase differs, in order to show the idiomatic nature of the phrases. In (4) and (5) the syntactic structure is identical, ‘pull’ followed by a body part noun in the illative case, but the meanings are quite different, since the direction of the verb ‘pull’ is different in each example (for Finnish ‘pull+comp’ constructions, see also Niemi 2007). Example (6), on the other hand, is part of an experiencer construction, which is typical for the idiomatic, intransitive use of the verb *ottaa*, ‘take’ (see also examples (9)–(10), below).

(4) vetää nenä-än/nen-i-in
    pull nose-ILL/nose-PL-ILL
    ‘beat someone’

(5) vetää naama-an
    pull face-ILL
    ‘eat fast and greedily’

(6) ottaa pää-hän
    take head-ILL
    ‘annoy’

Table 2 presents the frequencies of the 20 most frequent verbs and nouns of the verbal idioms collected from the literary corpus (Table 1). It is
noteworthy that the ten most idiomatic verbs cover 50% of all the verbs in the verbal idiom types of the sample. These verbs also belong to the most frequent verbs in Finnish in general.

<table>
<thead>
<tr>
<th>Verb</th>
<th>Types</th>
<th>Tokens</th>
<th>Freq</th>
<th>Noun</th>
<th>Types</th>
<th>Tokens</th>
<th>Freq</th>
</tr>
</thead>
<tbody>
<tr>
<td>olla 'be'</td>
<td>264</td>
<td>404</td>
<td>1</td>
<td>silmä 'eye'</td>
<td>27</td>
<td>35</td>
<td>304</td>
</tr>
<tr>
<td>ottaa 'take'</td>
<td>67</td>
<td>142</td>
<td>44</td>
<td>mieli 'mind'</td>
<td>23</td>
<td>55</td>
<td>91</td>
</tr>
<tr>
<td>saada 'get'</td>
<td>54</td>
<td>87</td>
<td>10</td>
<td>pää 'head'</td>
<td>23</td>
<td>51</td>
<td>291</td>
</tr>
<tr>
<td>mennä 'go'</td>
<td>51</td>
<td>78</td>
<td>68</td>
<td>suu 'mouth'</td>
<td>14</td>
<td>22</td>
<td>763</td>
</tr>
<tr>
<td>pitää 'keep'</td>
<td>42</td>
<td>89</td>
<td>29</td>
<td>naama 'face'</td>
<td>13</td>
<td>18</td>
<td>9466</td>
</tr>
<tr>
<td>vetää 'drag'</td>
<td>41</td>
<td>73</td>
<td>614</td>
<td>asia 'thing'</td>
<td>11</td>
<td>14</td>
<td>41</td>
</tr>
<tr>
<td>tulla 'come'</td>
<td>37</td>
<td>65</td>
<td>16</td>
<td>korva 'ear'</td>
<td>11</td>
<td>18</td>
<td>1225</td>
</tr>
<tr>
<td>tehdä 'do'</td>
<td>35</td>
<td>82</td>
<td>30</td>
<td>aika 'time'</td>
<td>10</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>käydä 'fit'</td>
<td>32</td>
<td>46</td>
<td>87</td>
<td>sana 'word'</td>
<td>9</td>
<td>12</td>
<td>114</td>
</tr>
<tr>
<td>panna 'put'</td>
<td>50%</td>
<td>27</td>
<td>36</td>
<td>turpa 'trap ('mouth')</td>
<td>9</td>
<td>14</td>
<td>7844</td>
</tr>
<tr>
<td>lähteä 'leave'</td>
<td>26</td>
<td>45</td>
<td>106</td>
<td>nauru 'laughter'</td>
<td>8</td>
<td>12</td>
<td>3100</td>
</tr>
<tr>
<td>antaa 'give'</td>
<td>22</td>
<td>66</td>
<td>28</td>
<td>onni 'happiness'</td>
<td>8</td>
<td>10</td>
<td>809</td>
</tr>
<tr>
<td>pistää 'stick'</td>
<td>21</td>
<td>26</td>
<td>1099</td>
<td>henki 'spirit'</td>
<td>7</td>
<td>18</td>
<td>377</td>
</tr>
<tr>
<td>heittää 'throw'</td>
<td>19</td>
<td>29</td>
<td>754</td>
<td>kuvio 'figure'</td>
<td>7</td>
<td>9</td>
<td>1849</td>
</tr>
<tr>
<td>päästä 'get'</td>
<td>15</td>
<td>29</td>
<td>106</td>
<td>käsi 'hand'</td>
<td>7</td>
<td>10</td>
<td>168</td>
</tr>
<tr>
<td>jäädä 'stay'</td>
<td>12</td>
<td>17</td>
<td>90</td>
<td>matka 'trip'</td>
<td>7</td>
<td>9</td>
<td>248</td>
</tr>
<tr>
<td>katsoa 'look'</td>
<td>9</td>
<td>19</td>
<td>98</td>
<td>niska 'neck'</td>
<td>7</td>
<td>10</td>
<td>2262</td>
</tr>
<tr>
<td>lyödä 'hit'</td>
<td>8</td>
<td>10</td>
<td>763</td>
<td>puhe 'speech'</td>
<td>7</td>
<td>11</td>
<td>444</td>
</tr>
<tr>
<td>nähdä 'see'</td>
<td>8</td>
<td>9</td>
<td>69</td>
<td>aivot 'brains'</td>
<td>6</td>
<td>21</td>
<td>3282</td>
</tr>
<tr>
<td>painaa 'press'</td>
<td>7</td>
<td>9</td>
<td>614</td>
<td>jalka 'leg'</td>
<td>6</td>
<td>6</td>
<td>423</td>
</tr>
</tbody>
</table>

Table 2. 20 most common verbs and nouns in different verbal idioms (there were altogether 327 different verbs and 548 different nouns collected from the idioms of the literary corpus, Nenonen 2002: 57). Freq = frequency ranking of the Finnish frequency dictionary⁶ (Saukkonen et al. 1979).

The arbitrary nature of idioms becomes clearly visible, if we try to generate idioms on the basis of the list in Table 2. Any combination whatsoever is not possible: for example, combinations ottaa silmä-än 'take eye-ILL' 'distract, strike one’s eye,' ottaa pää-hän 'take head-ILL' 'annoy,' or ottaa

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⁶ The Finnish frequency dictionary contains Finnish nuclear vocabulary, 43,670 different words that cover 90% of a c. 400,000-word corpus (Saukkonen et al. 1979: 7).
su-i-hin ‘take mouth-PL-ILL’ ‘have oral sex,’ are idioms, but ottaa miele-en
‘take mind-ILL’ and ottaa naama-an ‘take face-ILL’ are not.

The following case studies will provide an overview of two of the
most idiom-prone words, the verb ottaa ‘take’ and the noun silmä ‘eye,’
using the Karjalainen corpus and dictionaries. The purpose is to map the
general usage of these words. At the same time, the aim is to locate idioms
in the lexicon.

2.2 The most typical verb: ‘take’

On the grounds of the data, we may claim that in addition to the maximally
empty verb olla ‘to be,’ ottaa ‘take’ is the most idiom-prone verb in
Finnish. This frequently used verb has several dictionary meanings and
belongs to many constructions that vary in their degree of idiomaticity (see
also Ruhl 1999, for corresponding use of English take, and Newman 1996,
for the verbs ‘give’ and ‘take’ in various languages).

The usage of the verb ottaa ‘take’ has been observed using the
Karjalainen corpus and Nykysuomen sanakirja, which reports no fewer
than 118 different meanings for this entry (Jussila 1988: 91). On the basis
of corpus studies, it appears that the verb ottaa is most commonly used
with abstract meanings (often metaphorically or in different constructions),
whereas the concrete meaning, i.e. ‘picking’ or ‘grasping,’ is relatively
rare. For an overview of the use of the verb, Table 3 presents the division
of the meanings in a random sample of 500 concordances of the verb ottaa
in the Karjalainen corpus and in the literary corpus. The division of
meanings is based on the classification of Nykysuomen sanakirja (for more
details, see Nenonen 2002: 100–103).
In Table 3 we see that the verb *ottaa* is used most frequently in “abstract or specialized meanings” in the *Karjalainen corpus* (newspaper text). In the literary corpus, which partly imitates spoken language, the distribution differs a little to the advantage of concrete meanings. The meanings vary from rather concrete expressions for dressing, eating, possessing, moving, etc. (e.g. *ottaa takki* ‘take coat, i.e. put on a coat,’ *ottaa makkaraa* ‘take sausage-PTV, i.e. eat some sausage,’ *ottaa lääke* ‘take drug, i.e. have a dose of drug,’ *ottaa haltuunsa* ‘take into one’s possession,’ *ottaa mukaan* ‘take with’) to more abstract expressions for obligations, choosing, regarding, understanding, etc. (e.g. *ottaa huomioon* ‘take into account, pay attention to,’ *ottaa aikaa tehdä jtk* ‘it takes time to do sth,’ *ottaa raskaasti*\(^7\) ‘take sth hard’). Especially the latter examples could also be placed among “fixed phrases,” which is one the classes included in the dictionary. Fixed phrases, such as (7–8), is a class that can also be called idioms (see also examples 6 above and 16, 19 below).

\[\text{(7) } \textit{ottaa } \begin{array}{c} \text{ kanta-} \\
\text{take } \text{attitude-PTV} \\
\text{‘speak out’} \\
\end{array}\]

\(^7\) *Ottaa ADJ-sti,* ‘take ADJ-adverb derivative ending,’ is also a constructional idiom, that may be filled up with suitable adjectives, like *kevye-sti* ‘light-DER,’ or *paha-sti* ‘bad-DER.’
In this study, most idioms fall into the largest group, the class of abstract or specialized meanings. It is obvious that the verb *ottaa* has a strong tendency to combine semantically with other words, and some of these combinations are institutionalized, which is a step towards lexicalization. Some of these combinations may also be regarded as phrasal verbs, like (7) and (8) (see also Kolehmainen 2006).

Intransitive use of the verb *ottaa* is typically more common in informal, colloquial texts, especially in experiencer constructions that consist of an experiencer in the partitive case and a complement in a locative case, as examples (9) and (10) indicate. Usually the complement is a body part noun, which is typical of idioms, as we have seen before.

(9) *Mummo*-a *ottaa* sydäme-stä.
    granny-PTV takes heart-ELA
    'Granny is having a heart attack.'

(10) *Minu*-a *ottaa* aivo-on/pää-hän/kallo-on.
    I-PTV takes brain-ILL/head-ILL/skull-ILL
    'I am irritated.'

2.3 The most typical noun: ‘eye’

A closer look at the meaning(s) of the most idiom-prone noun *silmä*, ‘eye,’ reveals interesting features of this particular noun, comparable to the verb *ottaa* ‘take’ above. Body part nouns are an interesting area in linguistics, since they tend to be an issue of not only lexicalization but grammaticalization as well. They seem to have a high facility for abstraction; for example, Deignan and Potter (2004) have reported a strong tendency of body nouns to be used non-literally in English and Italian. In their English and Italian data, around 50% of the citations of *eye(s)* were non-literal (Deignan and Potter 2004: 1236). In Finnish, the same tendency is even stronger. As shown below, less than half of the occurrences of noun *silmä* are used in its concrete meaning ‘an organ of sight.’ Otherwise it appears in a more or less abstract sense—also in metaphors and in idioms, like (11–12).
When we take a closer look at morphology of the noun *silmä*, we see that some cases are more idiomatic than others.\(^8\) Figure 2 presents the distribution of the ten most common case/number inflected forms of the noun *silmä*. Every case is analyzed by taking a random sample of 100 items per inflected form from the Finnish Language Bank. According to the Karjalainen corpus (Laine and Virtanen 1999), the lemma frequency of the noun *silmä* is 5,882, i.e. 173/one million words. The summed frequency of the ten most frequent cases, presented in Figure 2, is 4,359, i.e. 74% of all occurrences of the noun *silmä* ‘eye’ in the corpus.

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\(^8\) Generally, some cases are more idiom-prone than others in Finnish. In Nenonen (2002: 59) it is shown that there are some highly idiom-prone cases especially in verb phrase idioms, like the partitive, the illative, and the instructive, which are more frequently used in idioms than in Finnish in general. On the other hand, the second most frequent case in Finnish, the genitive, is rare in idioms.
In Figure 2, we notice clearly that there are three cases—partitive, illative, and adessive—that are extremely common in idioms of this sample. In addition to the nominative case, partitive and illative (see examples 11–12 above) are two of the most frequent cases in Finnish idioms (Nenonen 2002: 59). The high proportion of idioms in some cases can also be explained by high textual frequency of certain idioms, like the adessive case in (13), where 47 of the 100 tokens were included in that particular idiom.

(13) pitää silmä-llä
    keep eye-ADE
    ‘keep an eye on sb’

As can be seen in Figure 2, over 80% of the inflected forms in the sample have a non-concrete meaning. Only the typical grammatical cases, the nominative singular, the nominative plural and the genitive plural, are more frequently used with a literal meaning (they also happen to be the most frequent cases in Finnish in general). On the other hand, the instructive
case that is very rare in modern Finnish, only appears with non-literal meanings, like *omin silmin* and *kirkkain silmin* in (14–15).

(14)  
\begin{align*}
\text{omi-} & \quad \text{silmi-} \\
\text{own-INSTR} & \quad \text{eye-INSTR}
\end{align*}

‘with one’s own eyes’

(15)  
\begin{align*}
kirkkai- & \quad \text{silmi-} \\
bright-INSTR & \quad \text{eye-INSTR}
\end{align*}

‘bright-eyed, pretending not to lie’

The instructive case in examples (14–15) refers to typical abstract usage of the noun ‘eye,’ i.e. metonymic ‘seeing’ or ‘looking’ (see also Deignan and Potter 2004).

2.4 Plural: a grammatical index of idiom

In addition to words, some grammatical categories can be idiom-prone as well, for example, the plural in Finnish. In idiomatic phrases, the plural ending is not used to refer to numerous entities but rather to a single, recurrent event as in (16).

(16)  
\begin{align*}
\text{ottaa} & \quad \text{pitkä-t/lähdö-t/hatka-t} \\
take & \quad \text{long-PL/leaving-PL/hatka}^{9}\text{-PL}
\end{align*}

‘leave, quit, take off, take a hike’

The idioms in (16) belong to the idiom family (Nunberg et al. 1994: 504) or the construction *ottaa N:t* ‘take N-PL,’ which allows various plural nouns (or even adjectives such as ‘long’) to be added to the construction in order to create an idiom. In general, a basic verb and a noun in the nominative plural constitute a typical constructional idiom in Finnish. A *constructional idiom*, according to Booij (2005: 83), is “a fixed syntactic pattern in which some positions may be filled by all kinds of words of the right category, whereas other positions are filled by specific morphemes or words.” Another example of the constructional idiom is an eponymous verb phrase *tehdä N_{prop}.t* ‘do N_{prop}-PL’ (17), in which you may add any proper

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9 *Hatkat* is a typical idiomatic isolate, sometimes also referred as a cranberry word, i.e. it is a unique word that appears only in a certain idiom (see also Nenonen and Niemi 1999, Nenonen 2007).
name (or sometimes even a common noun) after the verb in order to form an idiom.

(17) tehdä väyryse-t
do Väyrynen-PL
e.g. ‘sleep on it,’ ‘change one’s attitude,’ ‘cite oneself’

This idiom construction is highly context-dependent, as we can see in (17), where the interpretations are picked up among various examples on the Internet (Paavo Väyrynen is a well-known Finnish politician). The orthography of the idiom varies, but usually also the proper name begins with a small letter—this is a marker of idiomaticity as well. Generally, the interpretation of the idiom derives from a certain salient characteristic or action of the one the name refers to (see also Karlsson 2000).

Another example of the constructional idiom is a combination of a basic verb and a mass noun plural, as in (18), or a body part noun, as in (19). In (18), the idiom refers to a certain situation, e.g. a break from work, not to the “stuff” that we drink; one might as well have a nice cup of tea instead of coffee, and the drink is usually consumed with pastry (Niemi, Nenonen and Penttilä 1998: 296). On the other hand, the idiom in (19) refers to a situation that includes heavy and uncontrolled drinking.

(18) juoda kahvi-t
    drink coffee-PL
    ‘have some coffee’

(19) ottaa/vetää/juoda persee-t (ola-lle)
take/drag/drink ass-PL (shoulder-ALL)
    ‘get heavily drunk’

In all these examples (16–19), the connective aspect is not the plurality itself, but certain recurrency and abstractness. In this sense, we may regard unpredictable number as an indexical marker of idiomaticity in Finnish (Niemi et al. 1998, Nenonen 2002).

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10 Cf. the corresponding English structure, do a N<sub>props</sub>, e.g. do a Chomsky, where the proper noun is preceded with an indefinite article (Penttilä 2006). As in Finnish, also in English the prevailing meaning of the idiom is mostly dependent on the context (for idioms and constructions in general, see also Goldberg 1995, Jackendoff 1997, Booij 2002).
3. Discussion

On the basis of Finnish data, it seems that prototypical idioms are morphologically relatively simple. They consist of short, frequent basic verbs and inflected monomorphemic nouns. The most common idiom words refer to the basic level categories and belong to the most frequently used words in Finnish. In this respect, we may say that prototypical idioms are made of prototypical elements of language. In Table 4 we see that basic verbs and body part nouns form the majority of the most common idiom words (the numbers are based on data in Table 2 above). It must also be noted that the ten most common verbs in idioms—all basic verbs—already cover over a half of all the verbs that occur in idioms in the present corpus.

<table>
<thead>
<tr>
<th></th>
<th>Verbs</th>
<th>Nouns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic verbs and body part nouns among all idiom words in verbal idioms ($n$ of tokens = 1973)</td>
<td>58%</td>
<td>23%</td>
</tr>
<tr>
<td>Basic verbs and body part nouns among the 20 most common words in verbal idioms ($n$ = 1361)</td>
<td>93%</td>
<td>70%</td>
</tr>
<tr>
<td>Basic verbs and body part nouns among the 10 most common words in verbal idioms ($n$ = 1102)</td>
<td>100%</td>
<td>80%</td>
</tr>
</tbody>
</table>

Table 4. The proportion of basic verbs and body part nouns in the verbal idioms shown in Table 1.

All in all, the Finnish data indicate that idioms participate in lexicalization, not through the regular lexeme forming processes, i.e. derivation and compounding, but through idiom constructions with particular case and/or number inflections. In Figure 3, the implication arrows illustrate the dynamics of idiom formation in the Finnish lexicon. Above, we saw that derivations and compounds mainly derive from basic words and that compounds may include derivations as well, and vice versa (Figure 1). In Figure 3, the focus is on idioms. The figure is simple: basic words and inflectional endings are the main building blocks of Finnish idioms. Derivations are extremely rare in phrasal idioms, and so are also compounds (the latter, however, may sometimes appear in idioms).
What then is the main reason for the fact that derivations and compounds so reluctantly compose idioms? There may be several reasons, but the most obvious one is the simplicity of form: phrasal idioms are complex enough without derivations or compounds. In this respect, we may regard idiomatization as the “third party” of lexeme formation; it participates in lexeme formation through inflection in addition to the traditional methods of morphological word formation, i.e. derivation and compounding (see also Hyvärinen 1992: 36, Booij 2002).

Prototypical idioms are also close to single lexical units in the sense that their component words lose much of their semantics. The basic verbs are close to grammatical or functional words, and so are also many of the complements, although the range of complement nouns is wider. However, at least body part nouns tend to lose their prototypical nouniness, and thus make the phrases more idiomatic with syntactic irregularities and semantic discrepancy from their original meaning (Akimoto 1992: 236). The same tendency can also be found in verbs, for example, in the intransitive use of the typically transitive verb *ottaa*, ‘take,’ but, as we saw in section 2.2 above, this use may be rather marginal—although eye-catching.

To summarize, **prototypical idioms** are verb phrases, consist of basic words, and are morphologically simple. On the other hand, **prototypical words** that idioms are made of belong to basic-level categories, appear
very frequently in text corpora, and are morphologically simple, as well. What differentiates these idioms from any prototypical phrases? Nothing, in principle, if we look only at the morphological structure of the phrasal units.11 As suggested in every idiom study: it is the non-compositionality and unpredictability of meaning that makes the difference.

List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABL</td>
<td>ablative</td>
</tr>
<tr>
<td>ADE</td>
<td>adessive</td>
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<td>ALL</td>
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</tr>
<tr>
<td>DER</td>
<td>derivational suffix</td>
</tr>
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</tr>
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<td>genitive</td>
</tr>
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<td>ILL</td>
<td>illative</td>
</tr>
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<td>possessive</td>
</tr>
<tr>
<td>PTV</td>
<td>partitive</td>
</tr>
<tr>
<td>SG</td>
<td>singular</td>
</tr>
</tbody>
</table>

References


11 There is also psycholinguistic evidence that at least verb phrase idioms are syntactically fully parsed during comprehension like any non-idiomatic phrase, although in general, idioms may be easier to process (e.g. Flores D’Arcais 1993, Nenonen et al. 2002, Vainio and Nenonen 2007). The meaning of an idiom, however, may be stored in the mental lexicon as a holistic unit. There is also evidence that especially noun phrase idioms may be stored as wholes in the mental lexicon, in the same way as compounds (Nenonen et al. 2002).


*Karjalaisen korpus* (The Karjalainen corpus), a 34.5-million-word token computer-based newspaper corpus of Finnish based on the newspaper Karjalainen (vols.


Niemi, Sinikka (2004) Kieltypologiasia ja kognitiivisia havaintoja ruumiinosaidiomeista. [Typological and cognitive observations on body part idioms]. In Marja Neno-


Nykysuomen sanakirja, Parts 1–6 (1951–1961) [Dictionary of Modern Finnish]. Helsinki, WSOY.


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On Teaching the Pronunciation of Subphonemic Segments in English

Abstract

Although ESL pronunciation instruction has traditionally focused almost exclusively on phonemes, there have always been those who advocated devoting some attention to allophones. However, given the limited time and resources foreign-language teachers usually have to devote to pronunciation, they may have to be very selective in the subphonemic segments they introduce in the classroom. But on what basis can one choose which allophones to teach? In this study, I will attempt to show that there are two basic criteria which can serve to distinguish which of these may merit more consideration: transferability, i.e., potential pronunciability, and differential salience, i.e., the phonetic distance between a particular allophone and its corresponding phoneme. On this basis, it will be argued that if one is to consider teaching the pronunciation of any subphonemic segments in North American English (NAE), the highest priority should be given to flaps, especially those that are allophones of /t/.

1. Introduction

Intelligible pronunciation is an essential component of communicative competence. (Morley 1991: 488)

In the area of pronunciation instruction, a lot of attention has traditionally been directed towards how best to impart prosodic and segmental information to students, but until recently there has been considerably less discussion on the content of an ideal pronunciation curriculum or program. Yet the issue of what should be taught in pronunciation classes is far from trivial in view of the limited time and resources foreign-language teachers usually have to devote to this particular concern. For instance, MacCarthy has stated that

[t]he teaching of pronunciation can occupy only a portion of class time for the teacher of a foreign language, whose time overall naturally has to be divided among the different areas of language study. (MacCarthy 1976: 212)
Similarly, in referring specifically to pronunciation instruction, Brown has pointed out that

\[ \text{the ELT teacher (…) must often decide which features of language, on the one hand, are important and therefore merit precious class time and which, on the other hand, are relatively unimportant and may be overlooked until a more advanced stage. (Brown 1988: 593)} \]

Traditionally, the phonological aspect of ESL has involved an almost exclusive preoccupation with phonemes, as Dickerson has so rightly noted:

\[ \text{Pronunciation instruction for years (…) consisted of a heavy emphasis on segmentals—the vowel and consonant sounds of English—and a somewhat lighter emphasis on suprasegmentals—stress and intonation (…) The content and presentation were so well defined that the myriad pronunciation textbooks on the market seemed to be cut from the same pattern (…) It was not until recently that the crucial importance of rhythm for intelligibility began to be widely reflected in our textbooks. (Dickerson 1987: 11–12)} \]

Although the prosodic features of English have been gradually receiving much more emphasis (cf. Gutknecht (1978), Chela de Rodriguez (1983), Dickerson (1987), Haycraft (1992), McNerney and Mendelsohn (1992), Gilbert (1994)), another area of phonological instruction, viz., that of allophonic or subphonemic variation, has continued to be almost totally neglected. Yet, over the years, a few researchers in applied linguistics and TESL have occasionally tried to bring attention to the potentialities, and even the necessities, of providing students with instruction in this area.

In Standwell’s view, for instance, “far from the phoneme being of any assistance to the language teacher, it is rather a red herring” since “in pronunciation teaching one does not teach phonemes, one teaches phones” (1973: 119). Although few have espoused such an extreme position, opinions have been clearly expressed to the effect that that allophones should be given some consideration. For one, Shen has claimed that “[a]llophones provide acoustical clues to the recognition of phonemes” so that “[b]y careful utilization, they can constitute an aid to a more satisfactory production of the foreign language” (1959: 18). In the same vein, Prator has opined that

\[ \text{Even in a short course, if ability to speak English is an important objective, we should probably include attention to a few of the most important allophones that are in complementary distribution. (Prator 1971: 71)} \]
More recently, Celce-Murcia et al. have made some interesting observations in this regard. Concerning the aspiration of /p t k/, for instance, they have seen fit to apprise ESL instructors of the following potential difficulties:

In many languages, initial voiceless stops are less strongly aspirated than in English, or are even unaspirated. Speakers of these languages may therefore tend to confuse initial /b, d, g/ in English with their own language's unaspirated /p, t, k/ in this position. These learners may be misperceived by English native speakers as producing *back* instead of *pack*, or *die* instead of *tie*. In fact what they may be producing is an unaspirated /p/ or /t/ in place of the English aspirated counterparts. They may, of course, also have difficulty in differentiating such minimal word pairs. For these learners, aspiration can provide a valuable clue to perceiving and producing these words. (Celce-Murcia et al. 1996: 63)

Clearly, these phonologists are of the opinion that even though the aspiration of voiceless stops is not phonemic in English, failure to make ESL learners aware of it can lead to confusion. Native speakers may misinterpret some of their voiceless stops as voiced stops, and they themselves may have difficulty in discriminating between these two types of obstruents when they hear them.

There appears to be sound evidence, then, that there is more to teaching the pronunciation of English segmentals than simply concentrating on phonemes to the exclusion of their contextual phonetic variants, some of which may be articulatorily contrastive enough to cause confusion. But on what basis can one choose which allophones to teach? In this study, I will attempt to show that not all such sounds are created equal, as it were, and that there are two basic criteria which may serve to distinguish which of these may merit more attention: potential pronounceability or *transferability*, and *differential salience*, i.e., the phonetic distance between a particular allophone and its corresponding phoneme. On this basis, it will be argued that if one is to consider teaching the pronunciation of any subphonemic segments in North American English (NAE), the highest priority should be given to flaps, especially those that are allophones of /t/.

2. On teaching allophones

As was pointed out above, a major reason why allophones are so often neglected in pronunciation teaching is the widespread belief that phonemes are the only significant segments in language, the only ones that can make semantic differences. However, consider the following observation by Shen:
In the teaching of a foreign language, a comparison between the phonemic systems of both languages is essential. The purpose is to discover the phonemes that occur in the foreign language which do not occur in the native language. Such phonemes are generally accepted as the biggest learning load for the students and similarly the heaviest teaching problem for the instructor. But there are also structurally contrastive relations among the allophones of the two languages and between allophones of one language and phonemes of the other. Such relations must not be ignored either. (Shen 1959: 8)

Various other researchers in the area of L2 phonological acquisition have made comments along the same lines, i.e., that the phoneme is not the be-all and end-all of pronunciation teaching. Leather and James, for example, have noted that

it has become clear from a large volume of research over the past few decades that although the phoneme may be a useful construct in linguistic description, its status in the real-time processing of spoken language is problematic. (Leather & James 1996: 278)

As a consequence, then,

[p]erhaps a focus on the closer phonetic detail of F[oreign] L[anguage] sounds in acquisition (...) may be seen as a necessary corrective to previous more ‘coarse-grained’ contrastive analyses of the phonemes of first languages (L1s) and second languages (...). (James 1986: 225)

The whole issue of phonemes, allophones and intelligibility is summed up very astutely by Prator and Robinett:

[T]he safest solution for a teacher of ESL is (...) to regard unintelligibility not as the result of phonemic substitution, but as the cumulative effect of many little departures from the phonetic norms of the language. Many of these departures may be phonemic; others will be allophonic. But under certain circumstances, any abnormality of speech can contribute to unintelligibility. (Prator & Robinett 1985: xxii)

If we adopt the position that the teaching of pronunciation should involve more than simply imparting the phonemic contrasts of a language, the question then becomes how far one is willing to go, for there is virtually no limit to the phonetic details one can introduce to students. For example, some applied linguists have advocated the use of articulatory setting (also known as phonetic, phonatory or voice setting) in second-language instruction (cf. Ozga (1977), Erazmus (1982), Esling and Wong (1983), Esling (1987,) Jenner (1990), Collins and Mees (1992a, 1992b)). The
concept of articulatory settings, which was first outlined in Honikman’s (1964) seminal article, can be defined as

[t]he overall tendency (…) to maintain the organs of speech in some particular configuration throughout speech, as reflected in such factors as the height of the velum, the degree of lip-rounding and the tension of the tongue and lips. (Trask 1996: 34)

In essence, the theory proposes that each language has a unique configuration of articulators accounting for or establishing the natural sounds of that language that give it phonological unity and differentiate it from other languages.

For example, here is how Mees and Collins (1992) propose that Danish speakers should modify their articulatory setting when learning NAE:

- adopt a generally tenser setting of the body of the tongue, with firmer closures and narrowings for stops and fricatives and use of the tongue-tip for alveolar consonants;
- avoid palatalization in favor of uvularization plus a bunched tongue-shape to produce /š/ and provide r-coloring for r-adjacent segments;
- adopt semi-continuous nasalization;
- adopt a laxer lip-setting to facilitate weak rounding and protrusion for certain consonants;
- adopt a relaxed larynx setting for weaker glottalization and the avoidance of anterior voice.

Trying to implement these kinds of elaborate articulatory guidelines in an ordinary ESL classroom would be well nigh impossible given that students with different L1s would have to be given different sets of instructions. Moreover, one could easily run the risk of simply overwhelming them with indigestible and impracticable articulatory minutiae. In other words, too much attention to phonetic detail might be viewed as a waste of time given the widely recognized Critical Period Hypothesis. For if it is indeed the case that “after puberty it is nearly impossible to learn a second language and ‘pass for native’, especially in the area of phonology” (Major 1990: 14), that is, if we already know that “adults rarely attain native-like competence in an L2 phonology” (Young-Scholten 1992: 201), then the potential improvements in intelligibility that could be gained by teaching such fine distinctions of perception and production might not be worthwhile when measured against the time and effort involved. One cannot imagine any but
the most gifted students benefiting from the discrimination of such intricate sound distinctions.

Some sort of middle ground between this sort of exhaustive articulatory approach and one involving simple phonemic contrasts would therefore seem to be desirable. Such an approach, as was mentioned previously, would involve introducing students to allophonic variation. However, one might question whether all allophones deserve equal opportunity, so to speak, since there are surely some that are more frequent or distinctive than others, and so more apt to cause misperception when pronounced incorrectly.

For example, we know that “[t]he sound [f] sometimes occurs in English, as an allophone of /h/ in intervocalic position” (Laver 1994: 305), as in behind and ahead, and also that the labiodental nasal [m] is found in forms like triumph and comfort, but surely no one would want to attach as much importance to such phonetically inconspicuous and relatively uncommon phenomena as to the sort of ubiquitous flapping of word-medial and -final alveolar stops that is found in sequences like I did it Saturday or He credited it again. In the following sections, we will look at some possible criteria for ranking allophones in terms of the pedagogical attention they should be given.

3. The criterion of transferability

As was noted by Prator some thirty-five years ago, there exists an ever-present “problem of establishing a hierarchy of priorities for the teaching of pronunciation” (1971: 61). One reason for giving priority to certain allophones over others might be their superior potential pronounceability or transferability due to the fact that they are often found to be phonemic in many languages. This is based on the existence of

abundant evidence that the beginning learner seeking to impose phonetic structure on the L2 speech to which he is exposed makes perceptual reference to the phonetic categories of his L1. (Leather and James 1996: 274)

1 What should also be disregarded are those subphonemic segments that are the “universal consequences of inherent properties of the human speech-producing mechanism” (Anderson 1976: 340), such as the lengthening of vowels before voiced consonants, e.g., bit vs. bid, the rounding of consonants before back vowels (or vice versa), e.g., keel vs. cool, or the dentalization of alveolar consonants before dentals, e.g., tent vs. tenth.
Or, to look at it from another perspective, this potentiality stems from the frequent observation that “[n]otoriously, second language learners are unable to produce distinctions that do not function contrastively in their L1” (Busà 1992: 48). What this criterion entails, then, is that ESL instructors should normally achieve greater success in getting learners to pronounce a particular allophone correctly the more such an allophone is liable to be phonemic in their native language, though there are obviously limits to what can be done in this regard in heterogeneous L1 classes.

This is in line with one of Catford’s principles of pronunciation instruction, namely “the utilization of all sounds known to the students,” and the fact that “[t]eachers should (…) take advantage of articulatory possibilities of their students” (1987: 97). An example of this sort of technique as applied to flaps can be found in Cook’s pronunciation textbook wherein she gives the following suggestions:

If you speak any language—such as Spanish, Japanese, Italian, or Dutch among others—where your R touches behind the teeth, you are in luck with the American T. Just fix the association in your mind so that when you see a middle position T, you automatically give it your native R sound. Say, Beri bara bira (…) with your native accent. (Not if you are French, German, or Chinese!). (Cook 1991: 87)

Now, the most commonly adduced subphonemic segments in NAE are:

(1) the flaps, i.e., the oral flap [r] and the nasal flap [ɾ], which stem from /t d/ and /n/ respectively after a vowel or a central (and, for some speakers, a lateral) approximant, and before an unstressed vowel within words and any vowel at word boundaries, e.g. party [pʰáiɾi], get angry [ɡɛɹəŋɡi], incredible [ɪŋkʰɪɛɾəbət], inspected it [ɪnspɛktəɾət], banana [bənəˈɛɾə], an assistant [ənəˈɛɾəstənt]

(2) the positional variants of /p t k/, viz., aspirated [pʰ tʰ kʰ], which occur at the beginning of words and stressed syllables, e.g., pertain [pʰərtʰɛyn], tomatoes [tʰəməˈnɹoz], correct [kʰərɪkt], and unreleased [pʰ tʰ kʰ] which are found in certain codas, e.g., opted [ɒptʰet], coat [kʰəʊtʰ], acme [ækʰm],

(3) the velarized lateral [ɬ] which is found in syllable codas, e.g., fall [fɒːɬ], falter [fɒːɬtəɬ];

(4) the syllabic nasal [ɲ] which occurs when /n/ follows /t d/ in syllable codas, e.g., sweeten [swɪːtɛn], Sweden [swɪːdɛn].
When we check for these various segments in Maddieson’s presentation of “the phoneme inventory of each of the carefully selected sample of 317 languages which comprise the UCLA Phonological Segment Inventory Database (UPSID)” (1984: 200), we find that unreleased stops, syllabic nasals and nasal flaps are not contrastive in any of them, velarized laterals are phonemic in only about 2%, and aspirated stops and oral flaps (which may also be described as taps, and as either dental or alveolar) are each found in approximately 25% of these languages. On this basis, then, there is no doubt that the criterion of potential pronounceability would strongly favor aspirated stops and oral flaps over any of the other NAE allophones.

4. The criterion of differential salience

The second criterion that should figure in the determination of which allophones should be prioritized is that of what can be termed differential salience, that is, the phonological distance that exists between a particular phone and its corresponding phoneme. The idea behind this concept is that a greater articulatory distance between two segments should normally make them more perceptually distinct and thus more apt to lead to unintelligibility when one is substituted for the other. One way to measure the dissimilarity of segments in complementary distribution is to compare them in terms of distinctive features. Among the high-prioritized segments that were established above, namely the aspirated stops and the oral flap, we see that the only feature that sets plain stops apart from their aspirated counterparts is [spread glottis] (or simply [spread]), whereas flaps are distinguished from alveolar stops by either two or three features, as shown below:

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2 More generally, salience has been defined as “a property of a linguistic item or feature that makes it in some way perceptually and cognitively prominent” (Kerswill and Williams (2002: 81). The postulated phonological concomitant of this factor is that “[s]peakers are (...) more aware of variables whose variants are phonetically radically different” (Trudgill 1986: 11).

3 As defined by Halle and Stevens (1971), sounds that are produced with the vocal cords drawn apart such as aspirated and breathy-voiced or murmured consonants as well as voiceless vowels and glides are [+spread] while all other segments are [-spread].
Further evidence that differential salience plays a part in the recognition and noticeability of allophones can be drawn from various quarters. For instance, in Picard's (2001) exhaustive study of the treatment of Flapping in NAE pronunciation textbooks—both student- and teacher-oriented—that were published over the last 35 years or so, a full 40% of the ones that mention [r] do so solely as a positional variant of /t/, that is to say, in the case where the articulatory difference is at its maximum. Recent pronunciation dictionaries such as Wells (1990) and Upton et al. (2001) are also of interest in this regard since the only allophone either one systematically transcribes is the flap emanating from /t/ (which the former writes as /t$/) and the latter as /d$/).

Overall, then, it would seem that oral flaps, and especially those that alternate with voiceless alveolar stops, as in write [ræyt] and writer [ræyərɪ], or hit [hɪt] and hit it [hɪrɪt], should be given the highest consideration among the allophones of NAE. For anyone who might be wondering whether it is worthwhile to spend any time on these segments, the following observation by Celce-Murcia et al. would certainly seem to merit serious consideration:

Most learners are unaware of the flap allophone in NAE. This can mark their speech as foreign; it may also be the source of listening discrimination problems. For example, in place of the flap in phrases such as "cut it out" or "put it on," these learners may produce a fully articulated /t/, and they may hear /d/ as opposed to [r] in words like latter. Of course, those who have studied British English before encountering NAE may also be confused, since the presence of [r] is one of the most salient features differentiating NAE from British English dialects. For these learners, this difference in dialect will need elaboration (1996: 65).

4 For the whys and wherefores of the feature [vibrant], see Picard (1997).
5. On teaching flaps

One question that remains to be resolved is whether ESL instructors should have their students actually practice the pronunciation of flaps or simply make them aware of their existence in NAE. In other words, is the teaching of flaps to be approached in terms of their production, or should some training in their perception be considered sufficient? As it turns out, both points of view have been expressed in the literature.

Avery and Ehrlich, for example, give the following advice to ESL teachers:

You should not insist on having students pronounce flaps because using a /t/ where native speakers use a flap results in very little loss in comprehensibility. However, students should be given extensive practice in the recognition of flaps. They are very frequent in the spoken language and the ability to recognize words that contain flaps is very important in improving students’ comprehension of natural speech. (Avery & Ehrlich 1992: 42–43)

This is echoed by Dauer who, having pointed out that Flapping “is one of the main differences between North American English and other varieties of English,” adds that although “[i]t is not necessary for a non-native speaker to pronounce /t/ in this way,” ESL students “[n]eed to be able to hear it in order to understand native speakers” (1993: 142).

On the other hand, if one is to judge by the following statement, Celce-Murcia et al. seem to be in favor of not only making ESL students in North America aware of Flapping but of also trying to get them to integrate flaps into their L2 phonological system:

The flap allophone of /t/ and /d/ is a distinctive feature of NAE. For example, students often complain that when ordering water in a restaurant, they are not understood and have to repeat their request. This is probably a function of their not the flap allophone of /t/ (my emphasis). Since this distinction is not present in many dictionaries (especially the small bilingual dictionaries), students never discover it. Anecdotes of this nature emphasize the critical need for an awareness of positional variation and a teaching agenda that addresses this need. (Celce-Murcia et al. 1996: 69)

More categorical is Wells who says:

Learners of English as a foreign language who take Am[erican] E[nglish] as their model are encouraged to use § [i.e., r] where appropriate. (Wells 1990: 703)
6. Conclusion

It seems apparent that a sizeable number of people involved in the phonological aspect of second language education do not fully subscribe to the notion of a phoneme-centered pronunciation universe. Many of them have evidently heeded Prator’s admonition that “teachers would do well to suspect that any departure from the phonetic norms of the language can have a negative effect on the intelligibility of speech” (1971: 61). Thus, in the aforementioned study of pronunciation textbooks by Picard (2001), for example, it was shown that about half of them contain some sort of information on Flapping, a fact that certainly seems to demonstrate an awareness on the part of the authors that ESL students should be familiar with this process. More significant, perhaps, is the fact that over 75% of the resource books designed specifically for teachers mention flaps, since it is quite possible that their influence might have some sort of trickle-down effect on those who will be designing and using ESL student-oriented pronunciation textbooks in the future.

All in all, then, the wisest course of action for anyone involved in teaching pronunciation in any capacity would seems to be that advocated by Prator:

In the absence of any consensus regarding the degree of accuracy to be sought in teaching pronunciation, most teachers will probably want to take a position somewhere between that of the champions of absolute allophonic accuracy and that of the methodologists who insist on no more than an ability to produce a rough approximation of phonemes. (Prator 1971: 64)

From the evidence that has been presented above, it would appear that certain NAE subphonemic segments should occupy a place in this sort of proposed phonetic middle ground, and that first among these should be the oral flap [r].

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Causative Spatial Expressions in Finnish and Swedish

Abstract

This article deals with some language-specific differences in Finnish and Swedish when expressing spatial causation. The focus is on the Finnish causative motion verbs *piilottaa* (‘hide’) and *hakea* (‘fetch’), which refer to a causation of spatial events: hiding or fetching causes something (or someone) to move along a path in direction to or from some place. Syntactic-semantic differences between the languages are explained as conceptual phenomena. The formal lexical descriptions made are therefore based on the framework of conceptual semantics. In Finnish the causative motion verbs *piilottaa* and *hakea* are both conceptualized as a *path* of the Theme’s movement, whereas the Swedish counterparts *gömma* and *hämta* are conceptualized as a *location* of the Theme after (*gömma*) respectively before (*hämta*) its movement. Through the theory of temporal structure, the language-specific differences can be explained through temporal relations within conceptual structure.

1. Introduction

This article investigates the language-specific differences—in Finnish and Swedish—and the linguistic commonalities in expressing spatial causation. The starting point for the analysis is a group of Finnish causative verbs—causative motion verbs, e.g. *piilottaa* (‘hide’) and *hakea* (‘fetch’)—that refer to a causation of spatial events: hiding or fetching causes something (or someone) to move along a path in direction to or from some place. The motion and the result of the causation is expressed in the phrase that indicates a direction (see examples 1 and 2). It must be pointed out that the verbs *piilottaa* (‘hide’) and *hakea* (‘fetch’) can also refer to a causation that does not involve movement of the hidden/fetched object, e.g. *He hid the door by covering it with a bookcase*; *The data is fetched from the internet.*

1 I am very grateful to Urpo Nikanne, Rolf Palmberg and Geda Paulsen for their valuable comments on earlier versions of this article. I also would like to thank the two anonymous referees for their insightful comments.
However, in this article I describe the verbs only in the sense ‘to cause spatial movement of the hidden/fetched object’.

The direction of the movement is encoded in the Finnish syntax by different locative cases. In the whole Uralic language family there is, as Hakulinen (1979: 522–526) points out, a “three-staged” locative case system that consists of the cases of location, ‘olosijat’ (expressing location at some place), the cases of change: ‘tulosijat’ (expressing movement in direction to some place) and ‘erosijat’ (expressing movement in direction from some place). According to Siro (1964), the main word connected to the cases of location is a location verb, whereas the main word connected to the cases of change is a motion verb. Thus, the locative case system in Finnish is organized along two dimensions: location and movement (see e.g. Karlsson 1978; Siro 1964: 25–40). The Indo-European languages, on the other hand, do not have this kind of three-staged locative case system. Swedish does not have morphological case at all, but prepositions or prepositional combinations (in i, på, ut, ur, från etc.) that correspond to the Finnish locative cases.

In traditional grammatical descriptions of Finnish, each locative case is described as being associated with a distinct basic meaning. For example the illative locative case (keittiöön), as in sentence (1), often expresses movement in direction to some place, whereas the elative locative case (keittiöstä), as in sentence (2), expresses movement in direction from some place. In Swedish, on the other hand, corresponding situations are encoded in the syntax by a preposition phrase that expresses location (e.g. i, på, hos, under):

(1) Matti pilott -i pallo -n keittiö -ön.
Matti hide -PAST-3SG ball -ACC kitchen -ILLATIVE
Matti göm -de boll -en i kök -et.
Matti hide -PAST ball -DEF i-PP-kitchen -DEF

‘Matti hid the ball in the kitchen’

(2) Matti hak -i pallo -n keittiö -stä.
Matti fetch -PAST-3SG ball -ACC kitchen -ELATIVE
Matti hämta -de boll -en i kök -et.
Matti fetch -PAST ball -DEF i-PP-kitchen -DEF

‘Matti fetched the ball from the kitchen’
In this article I concentrate on analyses of the differences between the Finnish verbs *piilottaa* (‘hide’) and *hakea* (‘fetch’), and their Swedish counterparts *gömma* and *hämta*, respectively. I argue that situations are conceptualized by human beings in different languages in different ways. Thus, the syntactic-semantic differences between different languages must be explained by the Lexical Conceptual Structure (LCS) of the verb. To explain conceptual differences between languages I use the approach of conceptual semantics (see e.g. Jackendoff 1983, 1990; Nikanne 1990, 1995, 1997a–c and 2006), which provides formal tools for describing this phenomenon. I argue that the language-specific differences in this case concern temporal relations within conceptual structure. My aim is thus to provide a formal lexical description of the Finnish causative motion verbs *piilottaa* (‘hide’) and *hakea* (‘fetch’), and their counterparts in Swedish.

In section 2 I present Finnish causative verbs in the light of the theory of conceptual semantics. In section 3 I use conceptual semantics in my analysis of Finnish causative motion verbs and their Swedish counterparts. In section 4 I conclude the results of the analysis.

2. Finnish causative verbs in conceptual semantics

The way that new words can be formed from already existing ones using derivational suffixes is one of the characteristic features of the Finnish language. Thus, it is a productive morphological process to derive causative verbs by using the causative suffixes ttA (or the suffix combinations ttA-ttA, U-ttA, ttA-U-ttA). In the Finnish verb *piilottaa* (‘hide’) the causative suffix -*ttA* is attached to a nominal stem *piilo* (‘hiding-place’), whereas in the verb *korjauttaa* (‘make repair’), the causative suffix -*utta* is attached to a verbal stem *korjata* (‘repair’). The deverbal causatives, which do not fall within the scope of this article, are in Finnish grammatical tradition called *kuratiivikausatiivit* (curative causatives) or *factitives* (the latter term is used in NS, Dictionary of Contemporary Finnish).2 To give a formal description of the lexical conceptual structure of denominal causatives (e.g. *piilottaa*), I introduce the theory of conceptual semantics.

The goal of the theory of conceptual semantics is to find the optimal way of describing the human cognitive system in a way that explicitly

2 For deverbal causatives, see e.g. Kytömäki (1978, 1989) and Paulsen (forthcoming).
explains the interface between different cognitive systems related to language. Conceptual representation of a word or LCS is understood as the level of understanding linguistic information, a link between the linguistic representations such as phonology, syntax and other cognitive domains (spatial, social, haptic knowledge etc.).\(^3\) As Nikanne (1997c: 157–158) points out, it has been more or less a standard assumption in generative grammar that the interface between syntax and conceptual structure is a trivial one-to-one mapping from syntax to semantics, and thus the syntactic structures are assumed to contain plenty of semantic information about event structure and thematic roles. Because the syntax and the semantics are separate representations, syntactico-semantic linking is a conceptual necessity (see e.g. Chomsky 1993, 1995; Jackendoff 1990; Nikanne 1997c: 158). In the framework of conceptual semantics, however, there is no trivial one-to-one mapping between syntax and conceptual structure.

In conceptual semantics, each constituent of a sentence is one of the major ontological conceptual categories, such as Events, States, Places, Paths, Time, and Direction (Jackendoff 1990: 22). There are two major tiers in conceptual structure: the thematic tier and the action tier which operate with thematic roles (Agent, Theme, Location etc.) and action roles (Actor, Undergoer). The thematic roles are determined in the conceptual structure. The lexicon is a part of the linking rule system. The conceptual structure is organized according to three zones that determine the order of the semantic functions (CAUSE, GO, TO, FROM etc.; see e.g. Jackendoff 1990; Nikanne 1990, 1995, 1997b). The organisation of the zones in Table 1 is given by Nikanne (1997b: 83):

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\(^3\) See e.g. Nikanne (1997a, 2006).
CAUSATIVE SPATIAL EXPRESSIONS IN FINNISH AND SWEDISH

ZONE 3  ZONE 2  ZONE 1  
( caulative zone) ( thematic zone) ( loation zone)  

CAUSE  GO  AT, ON, IN,  
BE  UNDER,…  
( place-functions)  
INCH  STAY  TO, TOWARD,  
EXT  FROM, VIA,  
CONF  AWAY-FROM  
( path-functions)  
MOVE  

Table 1: Zones and semantic functions

According to Jackendoff (1990), there are on a separate tier semantic fields that describe the cognitive backgrounds in which the events take place. The semantic fields Spatial, Temporal, Possessive, Identificational, and Existential are spread over the functions of zones 1 and 2, but not zone 3. Zone 3 has its own semantic fields. The most common ones are Physical, Social and Logical.4

The LCS of the denominal causative verb piilottaa (‘hide’), then looks like in (3):

(3)  
Matti  piilotti  -i  pallo  -n  keittiö  -ön.  
Matti hide  -PAST-3SG  ball  -ACC kitchen  -ILLATIVE  
‘Matti hid the ball in the kitchen.’  
AC  UN  
↓  ↓  
Agent  Theme  Goal  
MATTI  BALL  KITCHEN  
↑  ↑  ↑  
CAUSE → GO → TO  
Physical  Spatial  

The Finnish sentence Matti piilotti pallon keittiöön (‘Matti hid the ball in the kitchen’) is conceptualized as follows: ‘Matti caused the ball to move along a path towards the kitchen’. The LCS of the verb piilottaa contains

4 For the principles in zone 3, see Nikanne (1990: 100–122).
one causation, assigned by the function CAUSE. The verb *piilottaa* has three potential syntactic arguments, because the LCS of the verb contains three functions [CAUSE, GO, TO]. The CAUSE function selects the function GO, which in turn selects the function TO. The selection is marked with arrows in the formal description. The lexical function chain (f-chain) of the verb *piilottaa* selects an Agent for CAUSE, a Theme for GO, and a Goal for TO. The Agent is subject (*Matti*), the Theme is object (*ball*), and the Goal is expressed in the syntax as illative locative case adverb (*kitchen*). The causation is described in the Physical field, and the transition of the ball in the Spatial field. In the action tier, there are one Actor (assigned by the function AC) and one Undergoer (assigned by the function UN).

Jackendoff (1987) assumes that the LCS of the verb also includes the *temporal tier* (T-tier). Jackendoff (1990) distinguishes between two types of temporal effects on causation: *Entrainment* describes causation that lasts as long as the caused event (e.g. *Matti dragged the car down the road*) and *Launching* is a causation that is related to the starting point of the caused event (e.g. *Matti threw the ball into the lake*).

Nikanne (1990: 190) gives a formal description of temporal tier relations of the *Entrainment* and *Launching* as follows:

(4) Entrainment

\[
= \ldots
\]

(5) Launching

\[
\hspace{1cm}\text{The T-tier of the causing event} \\
\vdots \\
\hspace{1cm}\text{The T-tier of the caused event}
\]

Three points in (4) indicate that the temporal tier in question does not have any specific form, and the equal sign (=) means that the causing event and the caused event have the same temporal structure. The horizontal line in (5) denotes time duration and the vertical line a point of time. The lines under the temporal structure indicate optionality. The colon stands for correspondence between the points of time, i.e. the end boundary of the temporal tier of zone 3 is the starting boundary of core zones 2 and 1.
(Nikanne 1990: 188–190.) For example the T-tier of the sentence *Matti hid the ball in the kitchen* has the characteristics of Entrainment causation, because the causing event (Matti’s hiding the ball) lasts as long as the caused event (the ball coming to be hidden).

The time line of adjuncts falls outside the scope of the temporal tier discussed above. Nikanne (1997a: 344) suggests a separate temporal tier, the *constructional T-tier* or *CT-tier* that relates the temporal tier of a matrix clause to that of an adjunct. According to the theory of conceptual semantics, the T-tier of the matrix clause and the T-tier of the adjunct are separately linked to the CT-tier. The CT-tier itself has no exact structure but is a schematic notion. It is characterized only by the correspondence to a linear time course. It can be divided so that the beginning part of the shared T-tier describes the earlier time and the final part the latter time. If the CT-tier is divided, the abbreviation CT1 stands for the chronologically earlier part of the CT and CT2 stands for the chronologically latter part of the CT. The CT-tier can be described as in the following figure (Nikanne 1997a: 344–345):

a. The unitary CT-tier:

```
CT
```

b. The divided CT-tier:

```
CT1   CT2
```

When the T-tiers of the matrix clause and the adjunct clause are related to the CT-tier, the notions “is equal to,” “is included in” and in the negative “is not included in” are used. X stands for the T-tier of the adjunct and Y stands for T-tier of the matrix clause. The possible CT-relations are described as in (6):

\[
\begin{align*}
X = Y & \quad \text{means ‘X is equal to Y’} \\
X \in Y & \quad \text{means ‘X is included in Y’} \\
X \notin Y & \quad \text{means ‘X is not included in Y’}
\end{align*}
\]

The formal descriptions of the temporal tier relations are developed further in Pörn (2004). Pörn (2004: 32–36) gives a more explicit formalization of the temporal relationship between the matrix clause and the adjunct clause by defining explicitly the starting point and the final point of each situation.
(the matrix clause and the adjunct clause). The following abbreviations are used:

\[ P_s (M) / (A) \quad \text{‘The starting point of the T-tier of the Matrix clause/Adjunct clause’} \]
\[ P_f (M) / (A) \quad \text{‘The final point of the T-tier of the Matrix clause/Adjunct clause’} \]

According to the formalization above the Entrainment and Launching causations can be described as follows:

(7) **Entrainment:**
\[ P_s (M) = P_s (A) \quad \text{and} \quad P_f (M) = P_f (A) \quad (‘is equal to’) \]

(8) **Launching:**
\[ P_s (M) \geq P_f (A) \quad (‘is later than or equal to’) \quad \text{or} \quad P_s (A) \geq P_f (M) \quad (‘is later than or equal to’) \]

The option possibility in the Launching causation is based on whether the matrix clause or the adjunct clause is interpreted as the causing situation. In the analyses in section 3 I will show that the formal description made by Pörn (2004) can also be used to describe the causal and temporal relations within the matrix clause.

### 3. Causative spatial expressions in Finnish and Swedish

#### 3.1 The Finnish verb *piilottaa* (‘hide’) and its Swedish counterpart *gömma*

In this section I analyze the Finnish verb *piilottaa*, which is constructed with a case of change—the illative—that usually refers to movement in direction to some place. As already mentioned in section 2, the conceptual structure of the Finnish sentence *Matti piilotti pallon keittiöön* (‘Matti hid the ball in the kitchen’) is ‘Matti caused the ball to move along a path towards the kitchen’. The verb *piilottaa* has three potential syntactic arguments, because the LCS of the verb contains three functions \([\text{CAUSE}, \text{GO}, \text{TO}]\). The LCS of the verb *piilottaa* is formally described in (9):

(9) \[ \text{Matti piilotti } \text{-i pallon keittiöön.} \]
\[ \text{Matti hide } -\text{PAST-3SG ball } -\text{ACC kitchen } -\text{ILLATIVE} \]
\[ ‘\text{Matti hid the ball in the kitchen’}. \]
Path-structure:

[Matti₂ piilotti₁ pallon₃ keittiöön₄]₅.

<table>
<thead>
<tr>
<th>Agent</th>
<th>Theme</th>
<th>Goal</th>
<th>Syntactic functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATTI₂</td>
<td>BALL₃</td>
<td>KITCHEN₄</td>
<td></td>
</tr>
</tbody>
</table>

↑

CAUSE₁ → GO₁ → TO₁₅

<table>
<thead>
<tr>
<th>Physical</th>
<th>Spatial</th>
<th>Semantic fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrainment: Pₛ(zone 3) = Pₛ(zones 2–1) and Pᵀ(zone 3) = Pᵀ(zones 2–1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When describing the co-indexing of pieces of the lexical conceptual structure and the conceptual structure I use the formal description made by Nikanne (2000). The subscript indices determine the syntactico-conceptual linking. All the pieces of the conceptual and syntactic structure that are marked with the same subscript indices correspond to pieces of the lexical conceptual structure of the word that is marked with the same subscript indices. For example in sentence (9) all pieces in the conceptual structure that are marked with the subscript indices 1 correspond to the LCS of the verb piilottaa, which is marked with the same subscript indices in the syntax. The Agent MATTI that is marked with the subscript indices 2 in the conceptual structure corresponds to the subject Matti that is marked with the same subscript indices in the syntax.

As already noticed in section 2, the lexical function chain (f-chain) of the verb piilottaa selects an Agent for CAUSE, a Theme for GO, and a Goal for TO. The Agent is subject (Matti), the Theme is object (ball), and the Goal is expressed in the syntax as illative locative case adverb (kitchen). The situation expressed by the verb piilottaa is thus conceptualized as path or direction of the Theme’s movement. This can be explained by referring to the LCS of the verb piilottaa, which contains an event-function GO that selects a path-function TO. The verb piilottaa occurs thus as a path-structure.⁵

The temporal tier (T-tier) in sentence (9) has the characteristics of Entrainment causation. The causing event (Matti’s hiding the ball) lasts as long as the caused event (the ball coming to be hidden). Thus, the causing and the caused situations are temporally simultaneous. As Nikanne (1990:

⁵ For path-structures, see Nikanne (1997c).
points out, the temporal structure of the situation is in core zones 2 and 1 derived from the thematic structure features, such as directionality- and boundedness-features. These features are also important in the temporal structure of zone 3, where causation is located. The problem is to determine how the temporal structures of each situation, i.e. how the causing situation (in zone 3) and the caused situation (in core zones 2 and 1), are temporally related to each other. This is explicitly formalized by defining the starting point and the final point of each situation. Thus, the T-tier of sentence (9) is Entrainment: the starting point of the causing situation in zone 3 is equal to the starting point of the caused situation in core zones 2 and 1, and the final point of the causing situation in zone 3 is equal to the final point of the caused situation in core zones 2 and 1.

The Swedish counterpart of the Finnish sentence *Matti pilotti pallon keittiöön* is constructed with a PP-*i*, which usually refers to location at some place: *Matti gömde bollen i köket.*6 The conceptual structure of the Swedish sentence is ‘Matti caused the location of the ball to change place to be at the kitchen’. The verb *gömma* has four potential syntactic arguments, because its LCS contains four functions [CAUSE, INCH, BE, AT]:

\[
(10) \begin{align*}
&\text{Matti göm-de boll-en i kök-et.} \\
&\text{Matti hide-PAST ball-DEF i-PP-kitchen-DEF} \\
&Matti hid the ball in the kitchen'.
\end{align*}
\]

Interpretation 1: PP-*i*: Argument

\[
[\text{Matti}_{2} \text{ gömde}_{1} \text{ bollen}_{3} \text{ i köket}_{4}]_{5}.
\]

\[
\begin{array}{l}
\text{SUBJ} \quad \text{OBJ} \\
\hline
\text{Agent} & \text{Theme} & \text{Location} \\
\text{MATTI}_{2} & \text{BALL}_{3} & \text{KITCHEN}_{4} \\
\uparrow & \uparrow & \uparrow \\
\text{CAUSE}_{1} \rightarrow \text{INCH}_{1} & \text{BE}_{1} \rightarrow \text{AT}_{1} & 5 \\
\text{Physical} & \text{Spatial} \\
\end{array}
\]

T-tier: Launching: \( P_{f}(\text{zone 3}) = P_{s}(\text{zones 2–1}) \)

---

6 According to the Swedish dictionary *Svenskt språkbruk* (2003: 448), the verb *gömma* in the sense ‘put away,’ is constructed with a preposition phrase that expresses location at some place, e.g. *De hade gömt flyktingarna i källaren* (‘They had hidden the refugees in the basement’).
The lexical f-chain of the verb gömma selects an Agent argument for CAUSE, which is syntactically subject (Matti), a Theme for BE, which is syntactically object (ball), and a Location argument for AT, which is expressed in the syntax with the PP i köket. The Swedish verb gömma cannot, like its Finnish counterpart, occur as a path-structure. In Swedish the situation expressed by the verb gömma is not conceptualized as path or direction of the Theme’s movement, but as the Theme’s change of location. This can be explained formally by referring to the LCS of the Swedish verb gömma, which contains a change function INCH, which in turn selects a state-function BE that selects a place-function AT. The PP-i is linked to the argument structure of the verb, to the caused situation in core zones 2 and 1. Without explicit context the preference for the argument reading is strong. (For another interpretation of the Swedish PP, see 12.)

The T-tier of the Swedish sentence Matti gömde bollen i köket differs from that in Finnish. The causing and the caused situations cannot be temporally simultaneous. The causing event (Matti’s hiding or changing the ball’s location) is temporally separated from the caused situation (the ball’s new location at the kitchen). The causing event (Matti’s hiding the ball) ends at the same time as the caused event (the ball’s location at the kitchen) starts. The temporal structure of the sentence thus has the characteristics of Launching causation. The end boundary of the temporal tier of zone 3 is the starting boundary of core zones 2 and 1. This is formally described as follows: the starting point of core zones 2 and 1 is equal to the final point of zone 3.

It must be pointed out that the Finnish path-structure, i.e. [piilottaa + NP-illative] is not the only possible syntactic structure of the Finnish verb piilottaa. If the purpose is to express the goal of the hiding operation, then the sentence Matti piilotti pallon keittiössä (‘Matti hid the ball in the kitchen’) is not correct in Finnish. The NP-inessive (keittiössä) cannot be interpreted as the goal of the ball’s movement (i.e. hiding-place), as the illative (keittiöön) in (9). The sentence Matti piilotti pallon keittiössä must be interpreted as for example ‘Matti piilotti pallon laatikko keittiössä’ (‘Matti hid the ball in a box in the kitchen’), i.e. ‘Matti hid the ball somewhere and this event or hiding took place in the kitchen’. In the construction [piilottaa + NP-inessive] the goal of the ball’s movement is not expressed in the syntax. The Goal is implicit, i.e. not linked to the syntactic representation by the LCS of the verb. This is indicated by the superscript index I in (11):
(11) Matti piilotti -i pallo -n keittiö -ssä.
Matti hide -PAST-3SG ball -ACC kitchen -INESSIVE
‘Matti hid the ball while being in the kitchen’.

Place-structure:


Agent Theme Goal
MATTI2 BALL3β ARB4↑
↑ CAUSE1 → GO1 → TO1↑
Physical Spatial

T-tier: Entrainment: Pₚ(zone 3) = Pₚ(zones 2–1) and Pₜ(zone 3) = Pₜ(zones 2–1)

Add-on-adjunct: [keittiössä]₆

Secondary predicate (depictive) adjunct

CT-tier: Pₚ(M₃) = Pₚ(A₆) and Pₜ(M₃) = Pₜ(A₆)

The NP-inessive keittiössä cannot be linked to the argument structure of the verb piilottaa, but it stays outside the argument structure of the verb, as an add-on-adjunct. Nikanne (1997a: 342–343) divides adjuncts into two groups: fill-in-adjuncts and add-on-adjuncts. Fill-in-adjuncts (see sentence 14) are part of the core sentence. They express an argument that is lexically marked as implicit. These are not syntactic arguments but linked to a verb’s semantic argument with an argument construction. Add-on-adjuncts, on the other hand, are not part of the core sentence, but add something to its meaning. In sentence (11) the add-on-adjunct keittiössä only expresses where the hiding event takes place. Therefore, it is a secondary predicate, depictive adjunct.

The conceptual structure of the secondary predicate adjunct is as follows: the argument of the function BE is Theme, which is located somewhere. The Theme of the secondary predicate can be Matti (Matti is in the kitchen), the ball (The ball is in the kitchen) or the whole situation expressed by the verb piilottaa (The hiding takes place in the kitchen). This

---

7 For adjunct constructions, see e.g. Nikanne (1990).
is formally described using Greek letters. As already mentioned, the subscript indices determine the syntactico-conceptual linking, whereas the Greek letters indicate binding relations within the conceptual structure: the superscript \( \alpha \) indicates the binder, and the element marked with the normalized \( \alpha \) is the bindee. These arguments are co-referential, following the marking system of Jackendoff (see Jackendoff 1990: 63). \( \text{Alpha} \) binds the argument of the function \( \text{CAUSE} \) (Agent) and \( \text{Beta} \) binds the argument of the function \( \text{GO} \) (Theme). The function \( \text{AT} \) selects the Location argument (\( \text{kitchen} \)), which is expressed in the syntax as NP-inessive. This kind of locative case adjunct is described as a \( \text{place} \)-structure (see Nikanne 1997c). Jackendoff (1990: 277) analyzes the English depictive adjunct as an idiomatic construction that links the adjunct structure to a conceptual structure and gives the function \( \text{BE} \) and the possible predication options as parts of the construction. Such a construction is given in (11).

I argue that the temporal condition of a \( \text{place} \)-structure is that both situations (expressed by the matrix clause and the adjunct clause) are temporally simultaneous: “Matti hid the ball while being in the kitchen”. This is formally described in the CT-tier. The starting point of the matrix clause is equal to the starting point of the adjunct clause, and the final point of the matrix clause is equal to the final point of the adjunct clause. In this case the temporal relationship between the matrix clause and the adjunct clause is not about a causation event. The causation is expressed within the matrix clause. The T-tier of the matrix clause has the characteristics of Entrainment causation, as in (9). The Goal of the ball’s movement, i.e. the final point of the caused situation in core zones 2 and 1, is implicit. Thus, it differs from that in (9).

An important point concerning the language-specific differences is that the Swedish PP-\( \text{i} \) expression in connection with the verb \( \text{gömma} \) is ambiguous. The most natural interpretation of the sentence \( \text{Matti gömde bollen i köket} \) is that given in (10), which means that the PP \( \text{i köket} \) expresses the hiding-place and is thus linked to the argument structure of the verb, to the caused situation in core zones 2 and 1. However, within another context the Swedish construction \( [\text{gömma} + \text{PP-\( \text{i} \)]} \), as in \( \text{Matti gömde bollen i köket} \), can have another interpretation: ‘Matti hid the ball somewhere and this hiding took place in the kitchen,’ e.g. ‘Matti gömde bollen i lådan i köket’ (‘Matti hid the ball in a box in the kitchen’). The Location argument (hiding-place) is thus implicit, whereas the PP \( \text{i köket} \) stays outside the argument structure of the verb, as a depictive adjunct. Thus, the PP occurs as a \( \text{place} \)-structure:
(12) Matti göm-de boll-en i kök -et.
   Matti hide-PAST ball -DEF i-PP-kitchen -DEF
   ‘Matti hid the ball while being in the kitchen’.

Interpretation 2: PP- $i$: Adjunct

Place-structure:

[[(Matti$^2$ gömde$^1$ bollen$^3$[i köket]$^6$).

Matrix clause:  

\[
\begin{array}{ccc}
\text{Agent} & \text{Theme} & \text{Location} \\
\text{MATTI}_2^a & \text{BALL}_3^\beta & \text{ARB}_4^1 \\
\uparrow & \uparrow & \uparrow \\
\text{CAUSE}_1 \rightarrow \text{INCH}_1 \rightarrow \text{BE}_1 \rightarrow \text{AT}_1 \\
\text{Physical} & \text{Spatial} & \\
\end{array}
\]

T-tier: Launching: $P_f$ (zone 3) = $P_s$ (zones 2–1)

Add-on-adjunct:  

[i köket]$^6$

Secondary predicate (depictive) adjunct

\[
\begin{array}{c}
\alpha/\beta/f_5 \\
\uparrow \\
\text{BE} \rightarrow \text{AT} \\
\end{array}
\]

CT-tier: $P_s(M_5) = P_s(A_6)$ and $P_f(M_5) = P_f(A_6)$

The conceptual structure of the secondary predicate adjunct PP- $i$ is as follows: the argument of the function BE is Theme, which is located somewhere. The Theme of the secondary predicate can be Matti (Matti is in the kitchen), the ball (The ball is in the kitchen) or the whole situation expressed by the verb gömma (The hiding takes place in the kitchen). Thus, the conceptual structure of the Swedish PP- $i$—interpreted as an adjunct—corresponds to the construction [piilottaa + NP-inessive] in Finnish. (For detailed descriptions, see 11.)
3.2 The Finnish verb *hakea* (‘fetch’) and its Swedish counterpart *hämta*

In this section the focus is on the Finnish verb *hakea*, which is constructed with a case of change—the elative—that usually refers to movement in direction from some place. It must be pointed out that another Finnish verb, *läytää* (‘find’), is also constructed with a NP-elative, and semantically a closer counterpart to the verb *piilottaa* (‘Matti found the ball in the kitchen’). The verb *läytää*, however, differs conceptually from the verb *hakea* in that it does not entail that the object found is moved from the “hiding-place”. In fact, the verb *läytää* is conceptualized as follows: ‘to get information about the location of something/someone’. Thus, the verb *läytää* is not a causative verb at all and it does not express spatial movement. It will therefore not be dealt with here.

The conceptual structure of the Finnish sentence *Matti haki pallon keittiöstä* is ‘Matti caused the ball to move from the kitchen’. The verb *hakea* has three potential syntactic arguments, because the LCS of the verb *hakea* contains three functions [CAUSE, GO, FROM]. The LCS of the sentence is formally described in (13):

(13) *Matti hak -i pallo -n keittiö -stä.*

Matti fetch -PAST-3SG ball -ACC kitchen -ELATIVE

‘Matti fetched the ball from the kitchen’.

Path-structure:

[Matti₂ haki₁ pallon₃ keittiöstä₄]₅.

\[
\begin{align*}
\text{SUBJ} & \quad \text{OBJ} \\
\text{Agent} & \quad \text{Theme} & \quad \text{Source} \\
\text{MATTI₂} & \quad \text{BALL₃} & \quad \text{KITCHEN₄} \\
\uparrow & \quad \uparrow & \quad \uparrow \\
\text{CAUSE₁} \rightarrow & \quad \text{GO₁} \rightarrow & \quad \text{FROM₁} \\
\text{Physical} & \quad \text{Spatial} & \quad \text{5}
\end{align*}
\]

T-tier: Entrainment: \(P₃(\text{zone} \ 3) = P₃(\text{zones} \ 2–1)\) and \(P₁(\text{zone} \ 3) = P₁(\text{zones} \ 2–1)\)

The lexical f-chain of the verb *hakea* selects an Agent for CAUSE, a Theme for GO, and a Source for FROM. The Agent is subject (*Matti*), the Theme is object (*ball*), and the Source is expressed in the syntax as elative
locative case adverb (*kitchen*). The situation expressed by the verb *hakea* is conceptualized as *path* or *direction* of the Theme’s movement. Thus, it occurs, like the Finnish verb *piilottaa*, as a *path*-structure. This can be explained by referring to the LCS of the verb *hakea*, which contains an *event*-function GO that selects a *path*-function FROM. As in connection with the verb *piilottaa*, the temporal tier (T-tier) of the sentence has the characteristics of *Entrainment* causation. The causing event (Matti’s fetching the ball) lasts as long as the caused event (the ball being fetched). Thus, the causing and the caused situations are temporally simultaneous. (For detailed descriptions, see 9.)

The corresponding sentence in Swedish is *Matti hämtade bollen i köket* (‘Matti fetched the ball from the kitchen’). In the Swedish dictionary *Svenskt språkbruk* (2003), the verb *hämta* (‘fetch’), in the sense ‘pick up,’ is, like the verb *gömma*, constructed with a preposition that expresses location at some place (*i*, *på* etc.), e.g. *Hon gick och hämtade paketet på ICA*8 (*‘She went to collect a parcel from ICA’*). In *Svensk ordbok* (2000, 79), the Swedish verb *hämta* is semantically described as ‘go and get something or someone and bring them back,’ e.g. *hämta barnen på dagis* (*‘to pick up the children from the kindergarten’*).9 However, the Swedish verb *hämta* differs conceptually from the verb *gömma*. The verb *hämta* has three potential syntactic arguments, because the LCS of the verb *hämta* contains three functions [CAUSE, GO, FROM]. The LCS of the sentence *Matti hämtade bollen i köket* is formally described in (14):

---

8 The Swedish verb *hämta* is often used with the preposition *från* (‘from’) in speech.
9 According to the Finnish-Swedish dictionary *Suuri suomi-ruotsi-sanakirja* (1997), the Finnish phrase *hakea lapset päiväkodista* (‘pick up the children at the kindergarten’) is translated into Swedish with *hämta barnen på dagis*. 
Although both the Swedish verbs gömma and hämta are constructed with a PP that expresses location at some place, the sentence Matti hämtade bollen i köket cannot be conceptualized as ‘Matti caused the location of the ball to change place to be at the kitchen’ (c.f. 10, Matti gömde bollen i köket). The subject argument (Matti) cannot be interpreted as the Agent of the ball’s location, but as the Agent of the ball’s transfer from the kitchen. In connection with the verb hämta the Swedish PP expresses the Theme’s location before its transfer from the source. The path of the Theme’s movement is implicit in Swedish. Thus, the PP i köket must be described as a fill-in-adjunct that is linked to the argument structure of the verb hämta, to the caused situation, in core zones 2 and 1. Alpha binds the argument of the function BE (Theme) of the fill-in-adjunct and Beta binds the argument of the function AT (Location). The Theme argument of the function BE in (14) must be the ball. The Theme argument can be neither Matti nor the whole situation expressed by the verb hämta, as in the sentence (12). The PP-i is thus part of the core sentence in the expression [hämta + PP-i].
However, it must be noticed that the Swedish expression \([hämta + PP-i]\) is, like \([gömma + PP-i]\), ambiguous (cf. add-on-adjunct in 16).

The temporal tier (T-tier) of the matrix clause in (14) has the characteristics of \textit{Entrainment} causation. The causing event (Matti’s fetching the ball) lasts as long as the caused event (the ball being fetched). This means that the causing and the caused situations are temporally simultaneous. However, the fact that the ball is located at the kitchen before it can be transferred from the kitchen is described formally in the CT-tier as follows: The starting point of the matrix clause is equal to the final point of the adjunct clause. The CT-tier of the expression in (14) encodes that the situation expressed by the adjunct clause takes place \textit{before} the situation expressed by the matrix clause. Thus, the temporal relationship between the matrix clause and the adjunct clause in (14) differs from that in (12).

The Finnish verb \textit{hakea} can, like the verb \textit{piilottaa}, also be constructed with a NP-inessive and thus occur as a \textit{place}-structure. The sentence \textit{Matti haki pallon keittiössä} (‘Matti fetched the ball in the kitchen’) can, within another context, be interpreted as for example ‘Matti oli keittiössä hakemassa palloa laatikosta’ (‘Matti was in the kitchen fetching the ball from the box’). To put it differently, the adverb \textit{keittiössä} only describes the \textit{location} of the fetching event, or where the fetching takes place.
(15) Matti haki -i palloon -n keittiö -ssä.
Matti fetch -PAST-3SG ball -ACC kitchen -INESSIVE
‘Matti fetched the ball in the kitchen’

Place-structure:

\[
\text{[Matti}_2 \text{ haki}_1 \text{ pallon}_3 [\text{keittiössä}_6].}
\]

Matrix clause: 

\[
\begin{array}{ccc}
\text{Agent} & \text{Theme} & \text{Source} \\
\text{MATTI}_2^α & \text{BALL}_3^β & \text{ARB}_4^I \\
\uparrow & \uparrow & \uparrow \\
\text{CAUSE}_1 \rightarrow & \text{GO}_1 & \rightarrow \text{FROM}_1 \\
\end{array}
\]

T-tier: Entrainment: \(P_s(\text{zone 3}) = P_s(\text{zones 2–1})\) and \(P_f(\text{zone 3}) = P_f(\text{zones 2–1})\)

Add-on-adjunct: 

\[
\text{[keittiössä]}_6
\]

Secondary predicate, (depictive) adjunct

\[
\begin{array}{ccc}
\alpha & \beta & \text{KITCHEN}_6 \\
\uparrow & \uparrow & \\
\text{BE} \rightarrow & \text{AT} \\
\end{array}
\]

CT-tier: \(P_s(M_5) = P_s(A_6)\) and \(P_f(M_5) = P_f(A_6)\)

The NP-inessive \textit{keittiössä} cannot be interpreted as the source of the ball’s movement, as the NP-elative in the sentence \textit{Matti haki pallon keittiööstä}. The sentence \textit{Matti haki pallon keittiössä} must be interpreted as ‘Matti fetched the ball from somewhere and this event or fetching took place in the kitchen’. The source is implicit, whereas the locative case adverb stays outside the argument structure of the verb, as an \textit{add-on-adjunct}. Despite the differences concerning the Goal respectively the Source argument in zone 1, the construction \([\textit{hakea} + \text{NP-inessive}]\) corresponds to the construction \([\textit{piilottaa} + \text{NP-inessive}]\). (For detailed descriptions, see also 11.)

As already mentioned, the Swedish expression \([\textit{hämta} + \text{PP-i}]\) is, like \([\textit{gömma} + \text{PP-i}]\), ambiguous. The most natural interpretation of the expression \textit{Matti hämtade bollen i köket} (‘Matti fetched the ball from the kitchen’), is that the PP is linked to the argument structure of the verb, as a \textit{fill-in-adjunct} (see 14). Without explicit context the preference for the argument reading is strong. However, within another context the PP can stay outside the argument structure of the verb, as an \textit{add-on-adjunct} (i.e. depictive adjunct). Thus, it occurs as a \textit{place-structure}, e.g. ‘Matti hämtade
bollen i lådan i köket’ (‘Matti fetched the ball from the box in the kitchen’). (cf. 14.)

(16) Matti hämtade bollen i köket.

Interpretation 2: PP-\textit{i} = Adjunct

Place-structure:

\[ [\text{Matti}_2 \text{ hämtade}_1 \text{ bollen}_3][\text{i} \text{ köket}_6]. \]

Matrix clause: \[ [\text{Matti}_2 \text{ hämtade}_1 \text{ bollen}_3]. \]

\[
\begin{array}{ccc}
\text{Agent} & \text{Theme} & \text{Source} \\
\text{MATTI}_2^a & \text{BALL}_3^\beta & \text{ARB}_4^\iota \\
\uparrow & \uparrow & \uparrow \\
\text{CAUSE}_1 & \text{GO}_1 & \text{FROM}_1 \\
\end{array}
\]

T-tier: \textit{Entrainment}: \( P_s(\text{zone 3}) = P_s(\text{zones 2–1}) \) and \( P_f(\text{zone 3}) = P_f(\text{zones 2–1}) \)

Add-on-adjunct: \[ [\text{i} \text{ köket}_6] \]

\[
\begin{array}{ccc}
\alpha & /\beta/f_5 & \text{KITCHEN}_6 \\
\uparrow & \uparrow & \\
\text{BE} & \text{AT} & \end{array}
\]

\textit{CT-tier}: \( P_s(M_5) = P_s(A_6) \) and \( P_f(M_5) = P_f(A_6) \)

The conceptual structure of the Swedish PP-\textit{i}—interpreted as an add-on-adjunct—corresponds to the NP-inessive in Finnish. (For detailed descriptions, see 15.) The formal description of the place-structure in connection with the verb \textit{hämta}, given above, corresponds to that in connection with the verb \textit{gömma} (given in 12).

4. Conclusions

This article describes formally some language-specific differences—concerning the Finnish causative motion verbs \textit{piilottaa} (‘hide’) and \textit{hakea} (‘fetch’), and their Swedish counterparts—through the theory of conceptual
semantics. I have pointed out that syntactic-semantic differences between the languages can be explained as conceptual phenomena. By developing the theory of the temporal structure I have explained the language-specific differences through temporal relations within conceptual structure. In Finnish the causative motion verbs *piilottaa* and *hakea* are both conceptualized as a *path* (or *direction*) of the Theme’s movement, whereas the Swedish counterparts *gömma* and *hämta* are conceptualized as a *location* of the Theme after (*gömma*) respectively before (*hämta*) its movement. There is thus a mapping between spatial and temporal tier within conceptual structure in Finnish, whereas there is no such mapping in Swedish.

I assume a one-to-one mapping between syntax and conceptual structure in Finnish. The Finnish verbs *piilottaa* and *hakea* can, depending on the syntactic structure, occur both as *path* - and *place*-structures. The expressions [*piilottaa* + NP-illative] and [*hakea* + NP-ative] have the *path*-structure reading, whereas the constructions [*piilottaa* + NP-inessive] and [*hakea* + NP-inessive] have the *place*-structure reading. The *path*-structure reading reflects the NP-illative/ative as argument, whereas the *place*-structure reading reflects the NP-inessive as adjunct. In Swedish, on the other hand, both the *path* - and the *place*-structure reading correspond to the PP- *i* in Swedish. The Swedish PP- *i* is ambiguous, i.e. it can occur both as argument and adjunct. There is thus no one-to-one mapping between syntax and conceptual structure in Swedish.

**References**


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The Basic Colour Terms of Finnish

Abstract

This article describes a study of Finnish colour terms the aim of which was to establish an inventory of basic colour terms, and to compare the results to the list of basic terms suggested by Mauno Koski (1983). Basic colour term in this study is understood as Brent Berlin and Paul Kay defined it in 1969. The data for the study was collected using the field method of Ian Davies and Greville Corbett (1994). Sixty-eight native speakers of Finnish, aged 10 to 75, performed two tasks: a colour-term list task (name as many colours as you know) and a colour naming task (where the subjects were asked to name 65 representative colour tiles). The list task was complemented by the cognitive salience index designed by Sutrop (2001). An analysis of the results shows that there are 10 basic colour terms in Finnish—punainen ‘red,’ sininen ‘blue,’ vihreä ‘green,’ keltainen ‘yellow,’ musta ‘black,’ valkoinen ‘white,’ oranssi ‘orange,’ ruskea ‘brown,’ harmaa ‘grey,’ and vaaleanpunainen ‘pink’. These results contrast with Mauno Koski’s claim that there are only 8 basic colour terms in Finnish. However, both studies agree that Finnish does not possess a basic colour term for purple.

1. Introduction

Basic colour terms are a relatively well studied area of vocabulary and studies on them cover many languages of the world. Research on colour terms became particularly intense after the publication of Berlin and Kay’s (1969) inspiring and much debated monograph.

Berlin and Kay argued that basic colour terms in all languages are drawn from a universal inventory of just 11 colour categories (see Figure 1). According to their theory, every language has between 2 and 11 basic colour terms, and they present a hierarchy which specifies a limited number of evolutionary paths that a language can take when adding new colour categories. Languages start with two basic colour terms: BLACK and
WHITE (capitals denote the hypothetically universal colour categories); the third term to be acquired is RED; the fourth term is either GREEN or YELLOW; the fifth term is whichever of GREEN or YELLOW is missing; the sixth term is BLUE, and so on. If a language has a particular basic colour term, then it should also already entail all the earlier basic colour terms of the hierarchy.

\[
\text{[white]} \rightarrow \text{[green]} \rightarrow \text{[yellow]} \rightarrow \text{[red]} \rightarrow \text{[blue]} \rightarrow \text{[brown]} \rightarrow \text{[grey]} \rightarrow \text{[yellow]} \rightarrow \text{[green]} \rightarrow \text{[black]} \rightarrow \text{[purple]} \rightarrow \text{[pink]} \rightarrow \text{[orange]}
\]

Figure 1. Temporal-evolutionary ordering of basic colour terms after Berlin and Kay (1969). The Roman numbers indicate the corresponding evolutionary stage.

This hierarchy has been modified since Berlin and Kay’s original study, concerning precisely the earlier stages of development (see Kay 1975, Kay and McDaniel 1978, Kay et al. 1991, Kay et al. 1997 etc.).

**Basic colour term** was defined by Berlin and Kay as follows (1969: 5–7) and will be used in this article accordingly (some examples from Finnish are added):

1) It is monolexemic; that is, its meaning is not predictable from the meaning of its parts, e.g. the colour name *harmaa* ‘grey’ in Finnish;
2) Its signification is not included in that of any other colour term, e.g. *ruusunpunainen* ‘rose red’ and *viininpunainen* ‘wine red,’ which are two kinds of red for most speakers of Finnish;
3) Its application is not included in that of any other colour term, e.g. *kastanja* ‘chestnut,’ which may be predicated only for hair;
4) It must be psychologically salient for informants. Indices of psychological salience include, among others, a) a tendency to occur at the beginning of elicited lists of colour terms, b) stability of reference across informants and occasions of use, c) occurrence within the idiolects of all informants. Examples of this criterion may be *punainen* ‘red,’ *keltainen* ‘yellow,’ etc.

The above list consists of what are considered the primary criteria. When the colour name is still in doubt, the following subsidiary criteria should also be considered:

5) The dubious form should have the same distributional potential as the previously established basic terms;
6) Colour terms that are also names of an object are suspect. This criterion would exclude *orange* in English, if it were a dubious case on the basic criteria (1)–(4). Some Finnish examples are *persikka* ‘peach’ and *luumu* ‘plum’.

7) Recent foreign loanwords may be suspect, e.g. *kretliini* ‘violet’.

8) In cases where lexemic status is difficult to access [criterion (1)], morphological complexity is given some weight as a secondary criterion. For example, the Finnish term *sinivihreä* ‘blue green’ might be eliminated by this criterion.

Berlin and Kay studied 98 languages in total, and they also collected primary experimental data for 20 languages. The only Finno-Ugric (Uralic) language represented in their study was Hungarian, which they erroneously classified as Altaic, and they suggested that it has, exceptionally, 12 basic colour terms, including two reds—*piros* and *vörös* (which they glossed to English as *light red* and *dark red*, respectively) (Berlin and Kay 1969: 35–36). However, as was often the trouble with their field work, the number of subjects was insufficient (in fact they only had one Hungarian subject). Uusküla and Sutrop have subsequently carried out a field study with 125 Hungarian native speakers, the results of which have allowed them to argue that in fact there are 11, and not 12 basic colour terms in Hungarian (Uusküla and Sutrop 2007, Bogatkin-Uusküla and Sutrop 2005a).

In 1983, Mauno Koski discussed Berlin and Kay’s theory with reference to the Finnish language. His seminal monograph explored all Finnic languages, including Finnish, Estonian, South Estonian, Livonian, Karelian, Ludic, Veps, Votic and Ingrian. Koski made the first attempt to investigate the inventory of basic colour terms in Finnic languages, also categorising wide etymologies of colour names and colour verbs. However, he only worked with dictionaries and dialect collections, without employing any field methods.

The first empirical study of a Finno-Ugric language, carried out with a sufficient number of subjects (80), using precise colour stimuli and set within the theoretical framework provided by Berlin and Kay, was a study of the Estonian language undertaken by Urmas Sutrop (1995, 2000a, 2002). According to Sutrop, Estonian possesses exactly 11 basic colour terms—*must* ‘black,’ *valge* ‘white,’ *punane* ‘red,’ *kollane* ‘yellow,’ *roheline* ‘green,’ *sinine* ‘blue,’ *pruun* ‘brown,’ *hall* ‘grey,’ *lilla* ‘purple,’ *roosa* ‘pink’ and *oranž* ‘orange’. Koski, however, had proposed that there are only 10 basic colour terms in Estonian, excluding the term *oranž* ‘orange’
from his list of basic terms (Koski 1983). Recently, as mentioned above, Hungarian has also been studied empirically (Bogatkin-Uusküla and Sutrop 2005a, Uusküla and Sutrop 2007). Some examples of Finno-Ugric colour term studies carried out with other methods include: 1) a minor empirical study of Mansi (Vogul), a Ugric language (Sipőcz 1994), which is mainly based on literature, although 50 non-standard colour circles were shown to three female native speakers who were asked to name the colour; 2) a linguistic study on the colour terminology of Estonian dialects (Oja 2001); 3) a linguistic study on Moksha Mordvin (Turunen 2002).

To date, Finnish colour terms have not been investigated with field methods. Since the method for establishing basic colour terms used by Berlin and Kay is very complicated and time-consuming when used on a large, albeit sufficient, number of subjects (Berlin and Kay 1969: 5–7), Ian Davies and Greville Corbett have proposed a new field method based on Berlin and Kay’s original procedure (Davies and Corbett 1994, 1995). This makes the interviews easier to conduct and limits them to approximately 20–40 minutes each, depending on the language. Many European languages, like Russian (Davies and Corbett 1994), English (Davies and Corbett 1995), Estonian (Sutrop 1995, 2001, 2002), Hungarian (Bogatkin-Uusküla and Sutrop 2005a, Uusküla and Sutrop 2007), Turkish (Özgen and Davies 1998), and Catalan (Davies et al. 1995) as well as many exotic languages (e.g. Davies et al. 1992, Davies et al. 1994) have been studied with this field method.

The present study was carried out to establish the basic colour terms of Finnish with a particular interest in whether there are 11 basic colour terms or only 8 basic terms—valkoinen (valkea) ‘white,’ musta ‘black,’ punainen ‘red,’ vihreä ‘green,’ keltainen ‘yellow,’ sininen ‘blue,’ ruskea ‘brown,’ harmaa ‘grey’—as Koski has argued (1983). No experimental study has yet been carried out to examine which of the two terms valkoinen and valkea is the basic term for white, or whether the colour terms violetti ‘purple’ and oranssi ‘orange’ are basic colour terms, or whether there is a basic term to indicate pink colour in Finnish. The method of Davies and Corbett was complemented with the cognitive salience index, which for a colour term is calculated from its frequency and mean position, and which can also be used to discriminate basic terms from non-basic ones (Sutrop 2001, 2002: 35).
2. Case study: Finnish colour terms

Language: Finnish, Finnic, Finno-Ugric, Uralic.

Regions where the data have been collected: Helsinki, Turku, Lempäälä, Espoo and Tuusula, all in Finland.


Subjects: There were 68 subjects in total, 42 female and 26 male, whose age ranged from 11 to 75, with a mean of 39.5 years. The age of men ranged from 10 to 75 years with a mean of 41.4 years, and the age of women ranged from 11 to 70 years with a mean of 38.4 years.

In 2005 I interviewed 29 subjects, 19 of which were female and 10 male, their age ranging from 11 to 75, with a mean of 42.7 years. The age of men ranged from 16 to 75 with a mean of 44.9 years, and the age of women ranged from 11 to 68 with a mean of 41.5 years.

In 2006 I interviewed 39 subjects in total, 23 female and 16 male, whose age ranged from 10 to 70 with a mean of 37.2 years. The women’s age ranged from 17 to 70 with a mean of 35.8 years and the men’s age ranged from 10 to 70 with a mean of 39.2 years.

The subjects were from the following locations (in alphabetical order): Espoo, Helsinki, Hämeenlinna, Impilahti, Jyväskylä, Lohja, Kaarina, Kiiminki, Kirkkonummi, Korppilahti, Kouvolä, Lempäälä, Mikkeli, Mouhijärvi, Orimattila, Oulainen, Oulu, Pieksämäki, Pori, Riihimäki, Rovaniemmi, Salo, Savo, Savonlinna, Sipoo, Sääksjärvi, Tampere, Turku, Tyrvää, Urjala, Uusikaupunki, Vaasa, Vammala, Vantaa, Viipuri, and Äänekoski.

All the subjects were native speakers of Finnish, with different dialect backgrounds; some of the subjects were unable to name their dialect, but aware that they spoke “somewhat dialectally”. One subject used Finnish Sign Language to communicate with her parents. All the subjects completed the list task first and then the colour naming task. The subjects were not informed, until the beginning of the test, that the questions would refer to colours and colour terms.

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2 In fact there were 69 subjects in total. One subject did not have a normal colour vision, which was tested by using The City University Color Vision Test (Fletcher 1980). Throughout this study only the responses of subjects with normal colour-seeing ability are considered.
Colour vision: All the subjects had normal colour-seeing ability. All subjects were tested by using The City University Color Vision Test (Fletcher 1980), where the test was conducted after the list task and before the colour naming task. In the colour vision test, the subject is shown ten black tiles, in the middle of which is a dot of a certain tone of colour surrounded by four dots of differently coloured dots. The interviewee has to say which dot is the most similar to the central one: above, down, right or left. The test makes it possible to diagnose almost all the anomalies of colour vision like deuteronopia, protonopia, tritanopia, etc.

The language of the interview: Finnish.

3. Methods

The field method. The field method proposed by Davies and Corbett (1994, 1995) is used: an interview comprises two parts, a list task and a colour naming task.

The list task. The subjects were asked to name as many colours as they knew. All the terms were written down in the order in which the subjects listed them. The experimenter wrote down exactly what the subjects said. After this, the subjects were thanked and went on with the Colour Vision Test described above, and following this, the colour naming task.

The colour naming task. The subjects were shown the 65 colour-squares (tiles), one square at a time, in random sequence. The order was different for each subject and the colours were shown in sufficient daylight on a grey base. The experimenter asked, indicating each colour tile, the unvaried question: ‘What colour is that?’ in Finnish. All the answers were written down as said.

Stimuli. In the colour naming task, 65 standard tiles were used as stimuli. Each tile was a 5 x 5 cm sized wooden square covered with coloured paper. These colours had been chosen from the Color Aid Corporation range of colour papers using the Ostwald colour system (Ostwald 1939). The rationale for the 65 colour sample selection can be found in Davies et al. (1992).

The Ostwald colour system. In the Ostwald colour system, the main features of colour are colour tone i.e. hue, content of white i.e. tint and content of black or blackness i.e. shade. The brightness of the grey scale is also divided into eight grades according to their white and black content. Color Aid uses a modification of the Ostwald colour system, where there
are 24 chromatic colours—6 basic colours: Y—yellow, O—orange, R—red, V—violet, B—blue, G—green and their transition tones e.g. YO—yellow-orange, YOY—yellow-orange-yellow. Every colour tone breaks down into four light variants T1–T4, in which the share of tint (share of white) increases pro rata, and into three dark variants S1–S3, where the shade (share of black) increases. In addition, some extra-system colours have been used, such as Sienna and Rose Red. Co-ordinates CIE\(^3\) of the colour tiles used in the experiment (lightness, content of red and content of green) are available in the study by Davies and Corbett (1994: 70–71).

4. Finnish colour terms: results

In this section the results of the Finnish colour terms are presented. First, the list task and the colour naming task will be analysed separately, and then the results of both tasks will be combined.

The subjects named 5876 Finnish colour terms, among which 1014 were different. All the compound names, of different types of connection, provided by the subjects were referred to by different names (e.g. vaalea-vihreä ‘light green’ and vaalean-vihreä\(^4\) ‘light green,’ kirkas-punainen ‘bright red’ and kirkkaan-punainen ‘brightish-red,’ lehden-vihreä ‘leafish green’ and lehti-vihreä ‘leaf green’). The phonetic variants like liila and lila ‘lilac’ or ‘purple,’ beige and beessi\(^5\) ‘beige’ are also treated separately.

4.1 The list task

In the list task the subjects named 1506 colour terms in all, among them 332 different ones. The average list of named colours contained 13.47 entries. The lowest numbers of colour names which came to the subjects’ minds were 8 and 9, offered respectively by a 75-year-old pensioner and a 52-year-old consultant (both were men). The most colour terms, 53, were offered by a 68-year-old retired woman, who had taught Finnish at

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\(^3\) Known as the CIE 1931 color space or the CIE XYZ color space created by the International Commission of Illumination (CIE).

\(^4\) For the purposes of easier reading and convenience, composite colour names are written here with a hyphen [-], in contrast to the Finnish literary norm, and in order to show the concrete meaning of the composite parts of the compound (sometimes the hyphen is omitted, i.e. the enclitic variant is used).

\(^5\) The forms lila ‘lilac; purple’ and beessi ‘beige’ differ from the Finnish literary norm, but are used in spoken language.
The second highest number, 50 colour names, was offered by a 69-year-old cameraman. Women offered more colour names than men, and people with a higher level of education named more colour names than those with a lower level of education.

Table 1 presents all the colour terms that the subjects named first in the list. The colour term most frequently mentioned first for by both men and women was *punainen* ‘red’ (altogether 27 times). It was followed by *musta* ‘black’ (10 times) and *sininen* ‘blue’ (10 times), *valkoinen* ‘white’ (9 times), and *vihreä* ‘green’ (4 times). All the colour names named only once are considered odd.

<table>
<thead>
<tr>
<th>Term</th>
<th>English gloss</th>
<th>Women (42)</th>
<th>Men (26)</th>
<th>Total (68)</th>
</tr>
</thead>
<tbody>
<tr>
<td>punainen</td>
<td>red</td>
<td>18</td>
<td>9</td>
<td>27</td>
</tr>
<tr>
<td>musta</td>
<td>black</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>sininen</td>
<td>blue</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>valkoinen</td>
<td>white</td>
<td>6</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>vihreä</td>
<td>green</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>keltainen</td>
<td>yellow</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>liila</td>
<td>purple</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>oranssi</td>
<td>orange</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>sin⁶</td>
<td>blue</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>violetti</td>
<td>purple</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 1. The first offered colour terms in the list task.

Table 2 shows the naming frequency, mean position, salience index, and their corresponding rank orders for colour terms offered by five or more subjects in the list task. The list task characterises every named colour term by two parameters—the frequency of the word, i.e. how many subjects named each colour term, and the mean position, i.e. in which position in the sequence the colour term was named on average.

<table>
<thead>
<tr>
<th>Term</th>
<th>Gloss</th>
<th>Frequency</th>
<th>Rank</th>
<th>Mean position</th>
<th>Rank</th>
<th>Salience</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>punainen</td>
<td>red</td>
<td>66</td>
<td>2</td>
<td>2.44</td>
<td>1</td>
<td>0.398</td>
<td>1</td>
</tr>
<tr>
<td>sininen</td>
<td>blue</td>
<td>63</td>
<td>5</td>
<td>3.13</td>
<td>2</td>
<td>0.296</td>
<td>2</td>
</tr>
<tr>
<td>vihreä</td>
<td>green</td>
<td>60</td>
<td>9</td>
<td>4.85</td>
<td>3</td>
<td>0.182</td>
<td>3</td>
</tr>
<tr>
<td>keltainen</td>
<td>yellow</td>
<td>67</td>
<td>1</td>
<td>5.52</td>
<td>4</td>
<td>0.178</td>
<td>4</td>
</tr>
<tr>
<td>musta</td>
<td>black</td>
<td>65</td>
<td>4</td>
<td>5.98</td>
<td>5</td>
<td>0.160</td>
<td>5</td>
</tr>
<tr>
<td>valkoinen</td>
<td>white</td>
<td>66</td>
<td>2</td>
<td>7.26</td>
<td>6</td>
<td>0.134</td>
<td>6</td>
</tr>
<tr>
<td>oranssi</td>
<td>orange</td>
<td>62</td>
<td>7</td>
<td>9.65</td>
<td>9</td>
<td>0.095</td>
<td>7</td>
</tr>
</tbody>
</table>

Here, only the first part of a colour name *sininen* ‘blue’ is used. It was named by a person who started his list with colour names without *nen*-endings, such as *sini* instead of *sininen* ‘blue’ and *puna* instead of *punainen* ‘red’.
| Colour Term       | English Name | Value 1 | Value 2 | Value 3 | Value 4 | Value 5 |...
|------------------|--------------|---------|---------|---------|---------|---------|...
| ruskea  brown    | 62           | 7       | 10.27   | 12      | 0.089   | 8       |
| harmaa  grey     | 63           | 5       | 11.64   | 14      | 0.080   | 9       |
| vaalean-punainen| 51           | 10      | 9.69    | 10      | 0.077   | 10      |
| violetti  purple | 42           | 11      | 9.12    | 8       | 0.068   | 11      |
| vaalean-sininen | 40           | 12      | 11.83   | 16      | 0.050   | 12      |
| liila  purple    | 29           | 13      | 9.03    | 7       | 0.047   | 13      |
| turkoosi  turquoise | 26     | 14      | 12.00   | 17      | 0.032   | 14      |
| vaalean-vihreä  | 23           | 15      | 13.00   | 21      | 0.026   | 15      |
| pinkki  pink     | 16           | 20      | 12.50   | 20      | 0.019   | 16      |
| beessi  beige    | 17           | 19      | 13.94   | 23      | 0.018   | 17      |
| tumman-sininen  | 19           | 16      | 16.00   | 30      | 0.017   | 18      |
| beige  beige     | 16           | 20      | 13.63   | 22      | 0.017   | 19      |
| lila  purple     | 9            | 31      | 9.67    | 11      | 0.014   | 20      |
| hopea  silver    | 18           | 17      | 19.78   | 43      | 0.013   | 21      |
| kulta  gold      | 18           | 17      | 20.33   | 45      | 0.013   | 22      |
| tumman-punainen  | 13           | 24      | 14.92   | 28      | 0.013   | 23      |
| viinin-punainen  | 10           | 28      | 12.10   | 18      | 0.012   | 24      |
| vaalean-ruskea  | 14           | 22      | 17.50   | 34      | 0.012   | 25      |
| vaalean-keltainen| 14          | 22      | 17.71   | 35      | 0.011   | 26      |
| okra  ochre      | 10           | 28      | 14.20   | 26      | 0.010   | 27      |
| roosa  pink      | 10           | 28      | 14.30   | 27      | 0.010   | 28      |
| taivaan-sininen  | 11           | 25      | 16.73   | 33      | 0.010   | 29      |
| tumman-vihreä    | 11           | 25      | 18.45   | 38      | 0.009   | 30      |
| purppura  purple | 7            | 34      | 12.14   | 19      | 0.008   | 31      |
| tumman-ruskea    | 11           | 25      | 19.55   | 42      | 0.008   | 32      |
| luonnon-valkoinen| 8            | 32      | 18.13   | 36      | 0.006   | 33      |
| aniliini  aniline red | 5     | 38      | 11.60   | 13      | 0.006   | 34      |
| sini-punainen    | 5            | 38      | 11.80   | 15      | 0.006   | 35      |
| limen-vihreä    | 5            | 38      | 14.00   | 24      | 0.005   | 36      |
| mintun-vihreä   | 5            | 38      | 14.00   | 26      | 0.005   | 37      |
| sini-harmma      | 8            | 32      | 23.38   | 47      | 0.005   | 38      |
| koboltin-sininen | 6           | 36      | 18.67   | 39      | 0.005   | 39      |
| puna-ruskea  reddish brown | 5 | 38 | 15.80 | 29 | 0.005 | 40 |
Table 2. Frequency, mean position, salience index, and the corresponding rank orders for colour terms mentioned by five or more subjects in the list task ranged by the rank of the cognitive salience index.

It can be seen that the two parameters—naming frequency and mean position—provide different colour words as candidates for basic colour term status. Urmas Sutrop (2001, 2002) has offered a cognitive salience index to join these parameters. The cognitive salience index is described in detail in Sutrop (2001). According to Sutrop, this index is preferable to other list task (free-list) indices (such as Smith 2003, Smith and Borgatti 1997), because it is free from the effects that depend on the length of individual lists (Sutrop 2001: 272). In addition, Sutrop’s cognitive salience index also works with a small samples or small numbers of subjects.

The formula is calculated as follows: $S = F / (N \times mP)$. The dividend considers the frequency ($F$) with which a term is named in the list task. The divisor $N \times mP$ considers the weight of the mean position ($mP$) in which the term is named, and $N$ is the number of subjects. If all subjects have named a term ($F = N$) and the mean position of that term is 1, then the salience ($S$) is also 1 for that term. The cognitive salience index is normed to vary between 1 and 0. The basic terms in every domain are the most salient. The salient index of the most ideally salient term has the figure 1. Terms that tend to be named last and with a low frequency have a value declining towards 0. The term that is not mentioned at all has the salience 0. The cognitive salience index gives comparable results between different investigations, as it does not depend on the length of the individual lists (Sutrop 2001: 267).
Frequency, mean position, and the integral cognitive salience index are all good criteria for discriminating basic terms from non-basic ones. Sometimes the discrimination must also be made between more and less basic terms. According to Sutrop, in such cases, certain linguistic criteria can well be applied.

Sutrop states that his index is not only good for distinguishing basic colour terms from non-basic ones. Far more, with the cognitive salience index all list task interviews are analysable. Under the term “list task,” Sutrop means written or oral interviews in anthropology, linguistics, psychology, or other social sciences. The format of the list task is, “Please list all X-s that you know” (Sutrop 2001: 263). According to this format, the researcher or interviewer can ask his/her subjects to name as many animals as they know, or as many fruits as they know, or all the colours they know, etc. The question could also be: “Please name everything that you can sense with your nose”. Sutrop’s cognitive salience index has also been used to study emotion words in Estonian and Finnish (Vainik 2002, 2006, Tuovila 2005).

In this study, Sutrop’s index has been used because it combines the tendency of a basic term to occur at the beginning of the elicited lists (high mean position) with its occurrence in the idiolects of all the subjects (high term frequency). These two parameters correspond to the criteria of psychological salience in the definition of the basic colour term by Berlin and Kay (1969: 6) (presented in Section 1). In addition, the cognitive salience index helps us separate possible basic colour terms from the non-basic ones.

The most frequently named colour term is keltainen ‘yellow,’ named by 67 subjects. This term is followed by punainen ‘red’ and valkoinen ‘white’ (both named 66 times). Punainen ‘red,’ however, occurs at the beginning of the elicited lists (mean position rank 1), while the mean position rank of valkoinen ‘white’ is only 6. Only 12 terms were named by at least half of the subjects (Fr ≥ 34): punainen ‘red,’ sininen ‘blue,’ vihreä ‘green,’ keltainen ‘yellow,’ musta ‘black,’ valkoinen ‘white,’ oranssi ‘orange,’ ruskea ‘brown,’ harmaa ‘grey,’ vaalean-punainen ‘pink,’ violett ‘purple’ and vaalean-sininen ‘light blue’.

According to the mean position, the candidates for basic colour term status are punainen ‘red,’ sininen ‘blue,’ vihreä ‘green,’ keltainen ‘yellow,’ musta ‘black,’ valkoinen ‘white,’ liila ‘purple’ (rank 7), violett ‘purple,’ oranssi ‘orange,’ vaaleanpunainen ‘pink’ and lila ‘purple’ (rank 11),
followed by *ruskea* ‘brown’ (rank 12) and *aniliini* ‘aniline red’ (rank 13). The colour term *harmaa* ‘grey’ remains in rank 14. This denotes the fact that if the 3 non-basic colour terms *liila* ‘purple,’ *lila* ‘purple’ and *aniliini* ‘aniline red’ are named at all, this is done in the middle of the lists.

The most salient terms according to Sutrop’s cognitive salience index in Finnish are *punainen* ‘red,’ *sininen* ‘blue,’ *vihreä* ‘green,’ *keltainen* ‘yellow,’ *musta* ‘black,’ *valkainen* ‘white,’ *oranssi* ‘orange,’ *ruskea* ‘brown,’ *harmaa* ‘grey,’ *vaaleanpunainen* ‘pink’ and *violetti* ‘purple’. Cognitive salience is repeated in figure 2.

![Figure 2](image)

**Figure 2.** The most salient Finnish colour terms according to the cognitive salience index.

### 4.2 The colour naming task

In the colour naming task, subjects named the 65 colour squares in 4370 ways, among these there were 855 different terms. Some subjects said that they did not know the name for some given tile on 50 occasions: eleven subjects did not know how to name the colour tile with the Color Aid code ORO T3 (mostly *vaalea-oranssi* ‘light orange’), eight subjects did not name the colour tile YOY S2 (mostly *beessi* ‘beige’), etc. On average, 24.3

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7 Also known as *magenta* in English.
different names were given for each tile. In general, men had more
difficulty with naming the colour tiles than women, which combines very
well with earlier studies about English colour terms (such as Rich 1977,
vocabulary was usually smaller than women’s. Although they did not use
the colour terms inaccurately, they tended to name colour tiles with basic
colour terms, i.e. they did not specify whether the colour was light or dark,
rich or pale, etc. When women said that one tile was vaaleansininen ‘light
blue,’ men just mentioned it was sininen ‘blue,’ because the lightness or
darkness of the tile seemed irrelevant to them. The male subjects also rarely
used colour terms connected with fashion trends, like persikka ‘peach,’
luumu ‘plum,’ lime ‘lime,’ pinkki ‘pink,’ roosa ‘pink,’ etc. These colour
names are probably familiar to women from mail order fashion catalogues,
where many new colour terms are invented.

Table 3 shows the distribution of the most frequent terms given to
each tile with the number of subjects who used each term in the Ostwald
colour space.
<table>
<thead>
<tr>
<th>Code</th>
<th>Hue</th>
<th>Fr</th>
<th>Tint</th>
<th>Fr</th>
<th>Shadow</th>
<th>Fr</th>
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<tbody>
<tr>
<td>Y</td>
<td>keltainen ‘yellow’</td>
<td>37</td>
<td>vaalean-keltainen ‘light yellow’</td>
<td>16</td>
<td>beesi ‘beige’</td>
<td>4</td>
</tr>
<tr>
<td>380</td>
<td>kirkkaan-keltainen ‘bright yellow’</td>
<td>7</td>
<td>beige ‘beige’</td>
<td>4</td>
<td>beige ‘beige’</td>
<td>4</td>
</tr>
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<td>16</td>
<td>beesi ‘beige’</td>
<td>4</td>
</tr>
<tr>
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<td>oranssi ‘orange’</td>
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<td>ruskea ‘brown’</td>
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<td>keltainen ‘yellow’</td>
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<td>beige ‘beige’</td>
<td>4</td>
<td>tumman-ruskea ‘dark brown’</td>
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<td>tumma-oranssi ‘dark orange’</td>
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<td></td>
<td></td>
<td>sin-ihamaa ‘blue grey’</td>
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<td></td>
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<td></td>
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<td></td>
<td>violett ‘light turquoise’</td>
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The Basic Colour Terms of Finnish

381
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<tr>
<th>Code</th>
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<th>Tint</th>
<th>Fr</th>
<th>Shadow</th>
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<td>miskin-viheä 'mint green'</td>
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<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Unsystematic hues

ROSE RED
- punainen 'red' | 9 | vaalean-harmaa 'light grey' | 16 |
- punki 'pink' | 7 | vaalea-harmaa 'light grey' | 12 |
- karmuun-punainen 'carmine red' | 3 |

SIENNA BROWN
- ruusua 'brown' | 19 | harmaa 'grey' | 19 |
- puna-ruusua 'reddish brown' | 9 | vaalean-harmaa 'light grey' | 16 |
- tilten-ruusua 'brick brown' | 5 |

Achromatic hues

GRAY 1
- valkoinen 'white' | 18 |
- vaalea-harmaa 'light grey' | 13 |
- vaalea-harmaa 'light grey' | 10 |

GRAY 2
- harmaa 'grey' | 19 |
- vaalean-harmaa 'light grey' | 16 |
- vaalea-harmaa 'light grey' | 12 |

GRAY 3
- harmaa 'grey' | 46 |

GRAY 4
- harmaa 'grey' | 46 |

GRAY 5
- harmaa 'grey' | 46 |
- tumma-harmaa 'dark grey' | 10 |

GRAY 6
- harmaa 'grey' | 42 |
- tumma-harmaa 'dark grey' | 10 |

GRAY 7
- musta 'black' | 37 |
- tumma-harmaa 'dark grey' | 8 |

BLACK
- musta 'black' | 58 |

WHITE
- valkoinen 'white' | 49 |
- maalaim-valkoinen 'house painter's white' | 5 |

Table 3. Distribution of the most frequent terms and their corresponding frequencies in the tile naming task. Fr—frequency
Table 4 shows the most frequent terms used in the tile naming task, their total frequency, the number of tiles for which they were dominant, the number of tiles for which they were named at least once, and the frequency/tile ratio. The number of tiles for which a term was used at least once shows specificity and the extension of the colour terms in the colour space. The final column frequency/tile ratio shows the degree of consensus among the subjects. It can be seen that the most frequent terms have greater consensus than the rest.

According to the frequency measure (Fr > 130)\textsuperscript{8}, there are 8 candidates for basic term status: vihreä ‘green,’ sininen ‘blue,’ ruskea ‘brown,’ vaaleanpunainen ‘pink,’ punainen ‘red,’ violetti ‘purple,’ oranssi ‘orange,’ and harmaa ‘grey’. Three other candidates for basic status musta ‘black,’ valkoinen ‘white’ and keltainen ‘yellow’ fail to achieve high levels of frequency. This may be explained by the fact that there were only two colour tiles in the whole colour naming task that subjects could possibly name as yellow (Y and YOY). Moreover, only two tiles could be named black (besides the colour tile BLACK also GRAY 8), and only one was white, but it was not a pure white for Finnish subjects. That is why this tile was not only named by the colour word valkoinen ‘white,’ but was also described by other colour terms, such as maalarinvalkoinen ‘house painter’s white’ (5 times), luonnonvalkoinen ‘nature white’ (3 times), murrettu valkoinen ‘broken white,’ likantunut valkoinen ‘dirty white,’ luunvalkoinen ‘bone white,’ vaalea harmaa ‘light grey’ etc. The rationale for the 65 colour sample selection can be found in Davies et al. (1992).

\textsuperscript{8} Used for 2 colour tiles on average (2 x 65 = 130).
<table>
<thead>
<tr>
<th>Term</th>
<th>Gloss</th>
<th>Total frequency</th>
<th>Dominance frequency</th>
<th>No. of tiles</th>
<th>Frequency/No. of tiles</th>
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<td>keltainen</td>
<td>yellow</td>
<td>97</td>
<td>88</td>
<td>6</td>
<td>16.17</td>
</tr>
<tr>
<td>musta</td>
<td>black</td>
<td>97</td>
<td>95</td>
<td>4</td>
<td>24.25</td>
</tr>
<tr>
<td>vaalean-vihreä</td>
<td>light green</td>
<td>92</td>
<td>-</td>
<td>9</td>
<td>10.22</td>
</tr>
<tr>
<td>turkoosi</td>
<td>turquoise</td>
<td>84</td>
<td>-</td>
<td>9</td>
<td>9.33</td>
</tr>
<tr>
<td>vaalean-sininen</td>
<td>light blue</td>
<td>79</td>
<td>43</td>
<td>8</td>
<td>9.88</td>
</tr>
<tr>
<td>valkoinen</td>
<td>white</td>
<td>77</td>
<td>49</td>
<td>4</td>
<td>19.25</td>
</tr>
<tr>
<td>tumman-vihreä</td>
<td>dark green</td>
<td>58</td>
<td>-</td>
<td>6</td>
<td>9.67</td>
</tr>
<tr>
<td>vaalea-vihreä</td>
<td>light green</td>
<td>50</td>
<td>-</td>
<td>6</td>
<td>8.33</td>
</tr>
<tr>
<td>pinkki</td>
<td>pink</td>
<td>48</td>
<td>-</td>
<td>12</td>
<td>4.00</td>
</tr>
<tr>
<td>tumman-ruskea</td>
<td>dark brown</td>
<td>46</td>
<td>-</td>
<td>4</td>
<td>11.50</td>
</tr>
<tr>
<td>vaalean-harmaa</td>
<td>light grey</td>
<td>42</td>
<td>-</td>
<td>6</td>
<td>7.00</td>
</tr>
<tr>
<td>tumman-sininen</td>
<td>dark blue</td>
<td>40</td>
<td>-</td>
<td>6</td>
<td>6.67</td>
</tr>
<tr>
<td>vaalea-liila</td>
<td>light purple</td>
<td>39</td>
<td>-</td>
<td>7</td>
<td>5.57</td>
</tr>
<tr>
<td>sini-vihreä</td>
<td>blue green</td>
<td>38</td>
<td>-</td>
<td>7</td>
<td>5.43</td>
</tr>
<tr>
<td>lila</td>
<td>purple</td>
<td>33</td>
<td>-</td>
<td>13</td>
<td>2.54</td>
</tr>
<tr>
<td>vaalea-harmaa</td>
<td>light grey</td>
<td>32</td>
<td>-</td>
<td>5</td>
<td>6.40</td>
</tr>
<tr>
<td>vaalean-keltainen</td>
<td>light yellow</td>
<td>30</td>
<td>-</td>
<td>3</td>
<td>10.00</td>
</tr>
<tr>
<td>roosa</td>
<td>pink</td>
<td>29</td>
<td>-</td>
<td>7</td>
<td>4.14</td>
</tr>
<tr>
<td>vaalea-violetti</td>
<td>light purple</td>
<td>28</td>
<td>-</td>
<td>9</td>
<td>3.11</td>
</tr>
<tr>
<td>taivaan-sininen</td>
<td>sky blue</td>
<td>26</td>
<td>-</td>
<td>5</td>
<td>5.20</td>
</tr>
<tr>
<td>vaalea-liila</td>
<td>light purple</td>
<td>25</td>
<td>-</td>
<td>7</td>
<td>3.57</td>
</tr>
<tr>
<td>kirkkaan-sininen</td>
<td>bright blue</td>
<td>23</td>
<td>-</td>
<td>5</td>
<td>4.60</td>
</tr>
<tr>
<td>tumma-liila</td>
<td>dark purple</td>
<td>23</td>
<td>-</td>
<td>9</td>
<td>2.56</td>
</tr>
</tbody>
</table>

Table 4. The most frequent terms in the tile naming task, their total frequency, their dominance frequency, the number of tiles for which they were named at least once, and the frequency/tile ratio.

The final column, indicating the frequency/tile ratio, shows the consensus of use. The higher the ratio, the greater the consensus among the subjects. It can be seen that the most frequent terms have greater consensus than the
others. According to the frequency/tile ratio measure (< 15), there are 9 candidates for basic status: *musta* ‘black,’ *ruskea* ‘brown,’ *oranssi* ‘orange,’ *valkoinen* ‘white,’ *harmaa* ‘grey,’ *punainen* ‘red,’ *sininen* ‘blue,’ *keltainen* ‘yellow,’ and *vaaleanpunainen* ‘pink’. After these 9, there is a gap and only then two candidates for basic status *vihreä* ‘green’ and *violetti* ‘purple’ will follow. The reason for that may be the large number of green and purple colour tiles in this task. As can be seen in Table 4, the colour name *vihreä* ‘green’ was used to name 14 tiles and the colour name *violetti* ‘purple’ was elicited by 12 colour tiles.

In addition to the naming frequency and frequency/tile ratio the dominance frequency is also presented. A term is considered dominant if at least half of the subjects use the same name for a given tile, which means that the so-called dominance index has to be DI ≥1/2. This is the reason why some of the terms do not have a dominance frequency at all. The dominance index is counted to calculate the specificity index (SI). The specificity index is the dominant frequency/total frequency ratio at the same level. If the specificity index was 1, all the subjects used the same term only as the dominant term and there was absolute consensus among the subjects (see Davies and Corbett 1994: 79). The specificity index together with dominant colour terms on different consensus levels for Finnish colour terms is shown in Table 5.

It is possible to consider dominance and specificity indices on different levels of consensus. In this article the following limits for dominant indices are used (numbers are rounded where necessary):

<table>
<thead>
<tr>
<th>DI</th>
<th>1/10</th>
<th>1/4</th>
<th>1/3</th>
<th>1/2</th>
<th>2/3</th>
<th>3/4</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency per tile</td>
<td>≥7</td>
<td>17</td>
<td>23</td>
<td>34</td>
<td>45</td>
<td>51</td>
<td>68</td>
</tr>
</tbody>
</table>

Table 5 shows the dominant colour terms on different consensus levels together with their specificity indices. There is no dominant colour term for any tile at the absolute consensus level in Finnish. The highest is the consensus for the colour term *musta* ‘black’ (SI = 0.98). Surprisingly, exactly the same holds true for Hungarian colour names where the consensus 0.98 is the highest for the colour term *fekete* ‘black’ (Uusküla and Sutrop 2007). It is interesting that, when one compares those results with the studies of other languages in the geographic area, which have been carried out using the same method, then for Russian the specificity index is the highest for the colour term *belyj* ‘white’ (SI = 1, which indicates the absolute consensus among the subjects) (Davies and Corbett 1994: 79). In
Estonian the specificity index is also the highest for the colour term for white, \textit{valge} \((SI = 0.99)\) \citep{Sutrop1995, Sutrop2000a, Sutrop2002}. As can be seen from the Table 5, in Finnish the lowest consensus holds for the colour term \textit{vaaleanpunainen} ‘pink’ \((SI = 0.25)\). At the same time the colour name \textit{violett} ‘purple’ does not have a specificity index at all, because there was no dominant colour tile in the task. The tile the most frequently named as \textit{violett} was tile VRV—named 26 times, i. e. 38\% of all responses. Looking at the SI indices one can see that \textit{vaaleansininen} ‘light blue’ also has a value in this column \((SI = 0.54)\). This can be explained by the fact that the colour tile BGB T3 was named as \textit{vaaleansininen} by 43 subjects \((63\% \text{ of responses})\). In-depth discussion of the status of this colour name among others will follow below.

<table>
<thead>
<tr>
<th>Term</th>
<th>Gloss</th>
<th>SI</th>
<th>DI (1/10)</th>
<th>DI (1/4)</th>
<th>DI (1/3)</th>
<th>DI (1/2)</th>
<th>DI (2/3)</th>
<th>DI (3/4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>musta</td>
<td>black</td>
<td>0.98</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>keltainen</td>
<td>yellow</td>
<td>0.91</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>harmaa</td>
<td>grey</td>
<td>0.68</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>oranssi</td>
<td>orange</td>
<td>0.68</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>valkoinen</td>
<td>white</td>
<td>0.64</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>punainen</td>
<td>red</td>
<td>0.60</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>vaalean-sininen</td>
<td>light blue</td>
<td>0.54</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>vihreä</td>
<td>green</td>
<td>0.42</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>sininen</td>
<td>blue</td>
<td>0.40</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>ruskea</td>
<td>brown</td>
<td>0.40</td>
<td>9</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>vaalean-punainen</td>
<td>pink</td>
<td>0.25</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>violett</td>
<td>purple</td>
<td>0.00</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>liila</td>
<td>purple</td>
<td>0.00</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>vaalea-violettis</td>
<td>light purple</td>
<td>0.00</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>turkoosi</td>
<td>turquoise</td>
<td>0.00</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>tumman-vihreä</td>
<td>dark green</td>
<td>0.00</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>vaalea-vihreä</td>
<td>light green</td>
<td>0.00</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>pinkki</td>
<td>pink</td>
<td>0.00</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>tumman-ruskea</td>
<td>dark brown</td>
<td>0.00</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>vaalea-harmaa</td>
<td>light grey</td>
<td>0.00</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>tumman-sininen</td>
<td>dark blue</td>
<td>0.00</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>vaalea-liila</td>
<td>light purple</td>
<td>0.00</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

\textbf{Table 5.} Dominant colour terms in the tile naming task. SI—specificity index, DI—dominance index.

Looking at the lowest consensus level \((\text{threshold DI } 1/10)\) it can be seen that 64 tiles have a dominant colour term. The only tile which does not have a dominant term is YOY S2, while both \textit{beessi} ‘beige’ and \textit{beige}
‘beige’ are named 4 times (not 7). On the 25% consensus level (DI 1/4) one can find 44 tiles with 17 dominant names. On the 50% consensus level (DI 1/2) there are only 19 tiles with 11 dominant colour names, which are the most probable candidates for basic term status: **musta** ‘black,’ **keltainen** ‘yellow,’ **harmaa** ‘grey,’ **oranssi** ‘orange,’ **valkoinen** ‘white,’ **punainen** ‘red,’ **vaaleansininen** ‘light blue,’ **vihreä** ‘green,’ **sininen** ‘blue,’ **ruskea** ‘brown,’ and **vaaleanpunainen** ‘pink’. As has been argued before, the 50% threshold is not exceeded by the colour name **violetti** ‘purple’. **Violetti** is the most probable candidate for purple category, while Finnish also has other colour names to fill in this gap, like **liila** and **lila** ‘purple,’ **retliini** and **retuliini** ‘purple,’ and **sinipunainen** ‘bluish red’ (means also purple) (see Section 4.3 for this issue). On the next, 67% consensus level (DI 2/3) there is only 1 tile—BLACK with the colour name **musta** ‘black’.

If the specificity index at the 50% consensus level is taken, there would be 10 candidates for basic status; the threshold SI 1/2 > 0.30.

## 4.3 Combined results and discussion

In the list and the colour naming task the subjects named 1014 different colour terms. Of the 332 terms listed in the first list task, 167 were never used in the colour naming task (including **hopea** ‘silver,’ **kulta** ‘gold’ and **pronssi** ‘bronze’). On the other hand, in the colour naming task the subjects used 669 new different colour names not listed in the first task. Morphologically, there were 2711 monolexemic terms (101 different) and 3165 compound terms of which 913 were different (including **vaaleanpunainen** ‘pink’), named in the two tasks.

As a preliminary result, 12 candidates fulfilled at least one criterion according to the different tasks and measures. These account for 85% of the total responses (2304) in the list and the colour naming task (including **violetti** ‘purple,’ **vaaleanpunainen** ‘pink’ and **vaaleansininen** ‘light blue’). There are 11 standard terms: **musta** ‘black,’ **valkoinen** ‘white,’ **punainen** ‘red,’ **keltainen** ‘yellow,’ **vihreä** ‘green,’ **sininen** ‘blue,’ **ruskea** ‘brown,’ **oranssi** ‘orange,’ **harmaa** ‘grey,’ **vaaleanpunainen** ‘pink,’ **violetti** ‘purple,’ and one complex term **vaaleansininen** ‘light blue’. All the other terms suspected to have a (nearly) basic term status, like **sinipunainen**, **kretliini** and **valkea** (Koski (1983) treats them as respective synonyms for purple and white in his monograph), **pinkki** ‘pink,’ **roosa** ‘pink,’ **turkoosi** ‘turquoise’ and **beige** ‘beige’ (which are discussed often by Koski (1983)), **liila** and **lila** ‘lilac, purple’ (a relatively high frequency in the list task), and
tummanvihreä ‘dark green,’ vaaleanvihreä ‘light green,’ tummansininen ‘dark blue’ (a relatively high frequency in the colour naming task), do not meet any of the criteria established above (see Table 7).

All previous results for establishing basic colour terms in Finnish have been combined and the established terms, ordered according to their level of basicness, are presented in Table 7. The current analysis of the combined results was carried out with the same methods as in the case of basic colour terms of Estonian (Sutrop 1995, 2000a, 2002). In the list task, the naming frequency (Fr \(\geq 40\)) and mean position (mp < 8), and in the colour naming task, the naming frequency (Fr \(\geq 130\)), dominance index (DI 1/2 \(\geq 1\)), and specificity index (SI > 0.20) are considered, measured against given numerical values as thresholds which have to be superseded. The salience index is not included here because it depends on the frequency and mean position of the term in the list task.

The last column of Table 7 shows the sums of these criteria, the value of which for one colour term could be from 0 to 5. The higher this number, the more certain the status of the colour term as basic. In other words, it shows the terms’ level of basicness.

<table>
<thead>
<tr>
<th>Term</th>
<th>Gloss</th>
<th>List task</th>
<th>Colour naming task</th>
<th>Sum of criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>punainen</td>
<td>red</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>vihreä</td>
<td>green</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>sininen</td>
<td>blue</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>musta</td>
<td>black</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>valkoinen</td>
<td>white</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>keltainen</td>
<td>yellow</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>ruskea</td>
<td>brown</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>oranssi</td>
<td>orange</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>harmaa</td>
<td>grey</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>vaaleanpunainen</td>
<td>pink</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>vaaleansininen</td>
<td>light blue</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>violetti</td>
<td>purple</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>liila</td>
<td>purple</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>turkoosi</td>
<td>turquoise</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>beige</td>
<td>beige</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 7. Summary of the results where colour terms are ranged according to the level of basicness. Fr—naming frequency, mp—mean position, DI—dominance index, SI—specificity index.

The most salient colour terms in Finnish are punainen ‘red,’ sininen ‘blue’ and vihreä ‘green’ (those terms superseded all 5 thresholds). 4 thresholds are superseded by the colour terms musta ‘black,’ valkoinen ‘white,’
keltainen ‘yellow,’ ruskea ‘brown,’ harmaa ‘grey,’ vaaleanpunainen ‘pink,’ and oranssi ‘orange’.

At this point it is relevant to note that oranssi has been adapted to modern Finnish as a basic colour term, in contrast to what Koski has proposed (1983: 265). In Finnish, the colour name oranssi does not mean orange (fruit) as it does in English. This colour term has been displaced by another term, appelsiini ‘orange’. There is only one possible reason why colour term oranssi could not be a basic term according to the criteria of Berlin and Kay: namely, it is a late loanword borrowed into Finnish in the early 20th century through Swedish. However, that criterion could be circumvented, while it is considered only as subsidiary (Berlin and Kay 1969: 6–7).

Before making a final decision about the colour name vaaleanpunainen ‘pink,’ literally ‘light red’ Berlin and Kay’s criteria for basicness should be reconsidered (1969: 5–7). The first criterion by Berlin and Kay prescribes that a basic term must be monolexemic; that is, its meaning should not be predictable from the meaning of its parts. Thus, Finnish vaaleanpunainen (vaalea ‘light’ and punainen ‘red’) being a compound word, cannot be a basic colour term according to this linguistic criterion. Nevertheless, its meaning is, indeed, independent from the meanings of its parts, because there were no subjects who named light red with this term. Instead, other terms to indicate light red were used, like heleä punainen ‘light red’. Colour term vaaleanpunainen ‘pink’ also occurred in such compounds as tumma-vaaleanpunainen ‘dark pink’ and vaalea-vaaleanpunainen ‘light pink’ which clearly shows that it is thought as a new concept—pink colour. According to the dictionaries such as Alanne (1982) or Hurme and Pesonen (1986), vaaleanpunainen in translated to English only as *pink* (and vice versa), never as *light red*, although the meaning of *vaalean-* is given as *light* or *pale*.

Berlin and Kay’s original characteristics have been critizised, rearranged and given different weights by T. D. Crawford (1982), A. E. Moss (1989), Jerome Smith et al. (1995) and others. They have argued that it may be useful to distinguish between psychological—or perceptual—

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9 In English the word *orange* means both fruit and colour, although it is not clear for every native speaker which of the two meanings is the first. This is the only basic colour term in English considered transparent, while the other basic colour terms are opaque.

10 Etymologically *vaalea(n-)* is derived from *valkea* ‘white, light,’ thus its meaning might be ‘white red’ which corresponds to pink colour.
basicness and linguistic basicness. For instance, Crawford, in his revision of the original criteria has rejected all linguistic criteria.

Thus, Crawford (1982: 342) argues: “A basic colour term occurs in the idiolects of all informants. It has stability of reference across informants and across occasions of use. Its signification is not included in that of any other colour term. Its application is not restricted to a narrow class of objects”.

By those criteria *vaaleanpunainen* is, indeed, a basic colour term: it belongs to the idiolects of all informants, it has stability of reference across informants and across occasions of use (in the colour naming task more than 50% of the subjects named colour tile R T4 with that name); its use is not restricted to a narrow class of objects and its signification is not included in that of any other colour term, and it is cognitively salient as is shown by the salience index (see Table 2). Hence, it could be argued that in Finnish *vaaleanpunainen* ‘pink’ is a basic term psychologically, like *narancssárga* ‘orange’ (literally ‘orange-yellow,’ from *narancs* ‘orange’ and *sárga* ‘yellow’) in Hungarian. All other colour terms (inter alia monolexemic ones) that could be used to refer to the category of pink in Finnish, like *roosa* ‘pink’ and *pinkki* ‘pink,’ do not meet any criteria set up for the basic term.

Three thresholds in Table 7 (naming frequency in the list task, dominance and specificity indices in the colour naming task) are superseded by a colour term *vaaleansininen* ‘light blue’. It is possible that this term strives for basic status, because it forms a symmetrical pair with colour name *vaaleanpunainen* ‘pink’. The same phenomenon was found in Hungarian, where the status of the basic colour term *sárga* ‘yellow’ is extremely weak, while another colour name *citromsárga* ‘lemon-yellow’ tends to replace it in order to make a symmetrical pair with the basic colour term *narancssárga* ‘orange, literally ‘orange-yellow’ (Bogatkin-Uusküla and Sutrop 2005b: 97). However, in Finnish *vaaleansininen* ‘light blue’ does not appear to substitute for the basic colour term *sininen* ‘blue,’ but it lays claim to the 11th place among basic colour terms, which position should, according to Berlin and Kay’s theory, rather be occupied by a term for purple, i.e. one of the following: *violettii*, *liila* (or *lila*), *kretliini* (*retliini*), *sinipunainen*.12

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11 For more about Hungarian colour names see Uusküla and Sutrop 2007.
12 The reason why there are so many terms for purple in Finnish might be explained by the fact that none of these terms have a strong basic status. There are also meaning
It is also possible that the meaning of colour name *sininen* ‘blue’ will change in time, so that it refers to a darker colour than presently, and thus a need will arise for an additional basic colour term—*vaaleansininen* ‘light blue,’ which would then refer to a lighter region of the blue spectrum.\(^\text{13}\)

There are many languages in which two (basic) colour terms are used for blue, amongst them Russian, which has *sinij* ‘(dark) blue’ and *goluboj* ‘light (cold) blue’ for blue, and therefore 12 basic colour terms in total\(^\text{14}\) (Davies and Corbett 1994); Turkish has two terms for blue: *lacivert* ‘dark blue’ and *mavi* ‘blue’ (Özgen and Davies 1998); Italian has three terms for blue: *blu* ‘blue,’ *azzurro* ‘azure’ and *celeste* ‘sky blue’ (Kristol 1979, 1980), of which, according to Philip, two are basic colour terms: *blu* ‘dark blue’ and *azzurro* ‘light blue’ (Philip 2006: 61–62).

As far as *vaaleansininen* ‘light blue’ in Finnish is concerned, basic status is far from certain—the cognitive salience index places it 12th after a big gap. Unlike *vaaleanpunainen* ‘pink,’ the meaning of which is cognitively not predicted from its parts (linguistically it means *light* + *red*, but it is not used in this sense at all), *vaaleansininen* still clearly denotes light blue, because it is used only of light blue tiles in the colour naming task. As was already argued above, linguistic complexity of a term does not have to possess heavy weight if it can be considered as a basic term psychologically (for more on basic terms, see Sutrop 2000b).

differences. According to “Uusi suomi-englanti suursanakirja” 1984 [New Finnish-English Dictionary] (Hurme et al.) *liila* translates to English as *lilac* (also in the colour naming task subjects named light purple tiles mostly with that name or modifying it with *vaalea*(n)- ‘light’). According to the same dictionary colour names *violetti*, *(k)retliini* and *sinipunainen* should all be translated into English as *violet*, not *purple*. The only name that could be translated as *purple* among these is *sinipunainen*. In this article, all terms are translated into English as purple in order to emphasise their equal chance to establish themselves as the basic term.

\(^\text{13}\) Hereby it should be stated that two closely related languages Finnish and Estonian (both studied with the same method) have a different prototypical blue. While for Finnish it lays in colour tile BVB (56 % of total answers), for Estonian it is colour tile B (64 % of total answers). At this point I find it relevant to explain the difference between Uusküla (2006) and the present study where, according to the answers of 29 subjects I have suggested that prototypical blue in Finnish is a colour tile B. It clearly shows how different number of subjects can give different results.

\(^\text{14}\) Russian also has many terms for purple, e. g. *fioletovyy* ‘purple,’ *sirenevyy* ‘mauve,’ *lilovyj* ‘lilac’. Among these *fioletovyy* ‘purple’ is considered as basic (see Davies and Corbett 1994: 80–86).
Vaaleansininen ‘light blue’ should therefore not be regarded as a basic colour term in Finnish and should rather be regarded as an anomaly.

Only two thresholds (naming frequency in the list task and frequency in colour naming task) in Table 7 are superseded by the colour term violetti, which has been glossed as purple throughout this article, although its better meaning in English would be violet as given in Hurme et al. (1984). The basic status of this colour name seems to be rather questionable. When considering the cognitive salience index (see Table 2), violetti might be a basic colour term, as we find it on the 11th place. While there is also another colour term for purple in Finnish—liila whose preferable meaning in English would be ‘lilac’—these colour terms were put to a simple test.

In the present article, two phonetic variants of liila—liila and lila ‘lilac’—are counted as different words in order to show the exact responses of the subjects. If these two variants were counted as one word—under the colour name liila—somewhat different results would be obtained. According to that, naming frequency of liila in the list task would be 38 (liila has been offered 29 times and lila 9 times) and the salience index would score much higher—0.062, instead of the present 0.050 (see Table 2 thereinbefore). One can see that this calculation would raise liila to the 12th place instead of the present 13th, but not higher, so that violetti would still be the most salient term for the category of purple.

In the colour naming task there was no consensus about which colour tile could be referred to with the colour name violetti. The tile most frequently named with that term was the tile VRV (violet-red-violet) (26 times out of 68) and the next one was the tile VBV (violet-blue-violet) (25 times out of 68). Dominance (which is calculated so that at least 50% of the subjects must name one colour tile with a certain colour term) is one of the most important criteria to establish for basic colour term. While the colour name violetti is not a dominant colour name for any of the colour tiles, it does not have a specificity index either. Hence, violetti should not be counted as a basic colour term, indicating that there is no basic colour word for the category of purple in Finnish at all. These considerations arise from the data analysed in this study: clearly, more fieldwork might need be

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15 As referred to before, languages with more than one (basic) colour term for blue usually also contain more than one colour name for purple (Corbett and Morgan 1988, Moss 1989, Morgan and Corbett 1989, Davies et al. 1995). Problems appear when attempts are made to gloss those terms amongst languages (see Davies and Corbett 1994, Davies et al. 1995).
carried out in the future, as a greater number of interviews may provide somewhat different results.

The findings from the list and the colour naming task converge to suggest that Finnish has 10 basic colour terms and it does not have a basic term for purple, thus differing from Berlin and Kay’s list of 11 universal terms (see Table 8). According to Mauno Koski, whose only sources where dictionaries and dialect collections, the Finnish colour term inventory contains 8 basic terms—he excludes violett ‘purple,’ oranssi ‘orange’ and vaaleanpunainen ‘pink’ (Koski 1983: 265). According to the present study, however, the last two colour names—oranssi ‘orange’ and vaaleanpunainen ‘pink’—are in fact basic terms. The basic colour term for white in Finnish is valkoinen ‘white,’ not valkea ‘light,’ which, to some extent, have been treated synonymically by Koski and Todorova (Koski 1983, Todorova 1991). Actually, the meaning of this word could also be glossed to English as ‘light, lightness; fire’ (see Tuomi 1966 about its etymology). In spite of that, there are some expressions where valkea functions as a colour name, like valkeissa vaatteissa ‘dressed in white’ etc. (although valkoisissa vaatteissa ‘dressed in white’ is more usual). None of the subjects in the present study used this word as a simple word either in the list or in the colour naming task. It only occurred 4 times in compounds lumi-valkea ‘snow white,’ maidon-valkea ‘milk white,’ puhtaan-valkea ‘pure white,’ and hopea-valkea ‘silver white’.

<table>
<thead>
<tr>
<th>English gloss</th>
<th>Mauno Koski (1983)</th>
<th>Present study</th>
</tr>
</thead>
<tbody>
<tr>
<td>white</td>
<td>valkoinen</td>
<td>valkoinen</td>
</tr>
<tr>
<td>black</td>
<td>musta</td>
<td>musta</td>
</tr>
<tr>
<td>red</td>
<td>punainen</td>
<td>punainen</td>
</tr>
<tr>
<td>green</td>
<td>vihreä</td>
<td>vihreä</td>
</tr>
<tr>
<td>yellow</td>
<td>keltainen</td>
<td>keltainen</td>
</tr>
<tr>
<td>blue</td>
<td>sininen</td>
<td>sininen</td>
</tr>
<tr>
<td>brown</td>
<td>ruskea</td>
<td>ruskea</td>
</tr>
<tr>
<td>orange</td>
<td>(oranssi)</td>
<td>oranssi</td>
</tr>
<tr>
<td>grey</td>
<td>harmaa</td>
<td>harmaa</td>
</tr>
<tr>
<td>pink</td>
<td>-</td>
<td>vaaleanpunainen</td>
</tr>
<tr>
<td>purple</td>
<td>(violettii)</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 8. Basic colour terms in Finnish ranged by Berlin and Kay’s original basic colour term order.
5. Summary and conclusion

In the list and colour naming tasks 68 subjects named 5876 colour terms of which 1014 were different. In the list task there were 1506 terms offered in total, out of which 332 were different. In the colour naming task the subjects gave 4370 colour names to 65 colour squares. Among these there were 855 different names.

There are 10 basic colour terms in Finnish. Ranged top-down by cognitive salience index they are the following: *punainen* ‘red,’ *sininen* ‘blue,’ *vihreä* ‘green,’ *keltainen* ‘yellow,’ *musta* ‘black,’ *valkoinen* ‘white,’ *oranssi* ‘orange,’ *ruskea* ‘brown,’ *harmaa* ‘grey’ and *vaaleanpunainen* ‘pink’. The colour name *oranssi* ‘orange’ is adjusted to modern Finnish. The basic colour term for category of pink in Finnish is *vaaleanpunainen* ‘pink,’ while the colour term *violetti* ‘purple’ is not a basic colour term. Thus the Finnish language corresponds to the last, the seventh stage of Berlin and Kay’s scheme, but being still on a way to getting basic term for purple. The most probable candidate to fill in that gap in the future is colour term *violetti* ‘purple’. Differences between the present study and the basic colour term inventory suggested by Mauno Koski are the following: 1) the colour term *oranssi* ‘orange’ is a basic colour term, which either means that Koski was mistaken, or that the Finnish language has changed over the past 25 years so that it now possesses a basic term for orange; 2) according to the present study Finnish also has a basic term for pink.

References


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On Measuring Language Complexity as Relative to the Conveyed Linguistic Information

Abstract

In this mathematical approach to language complexity, a previously proposed formula for measuring grammar complexity is derived in a different way and somewhat modified. The formula measures relative language complexity, “relative” because the conveyed linguistic information is taken into account. Many examples, either abstract or representing structures of natural languages, are used in the derivation and to illustrate the method.¹

1. Introduction

Language complexity has recently become very interesting to researchers, as witnessed by an increasing number of conferences and publications on the topic. In this paper, I present a newly modified formula for measuring grammar complexity. The formula is based on a formal grammatical model and language complexity is identified with the complexity of the formal grammar. Only simple sentences are modeled, but with various grammatical structures. The formula enables a comparison of the complexity of these structures relative to the linguistic information they convey. Simply put, a grammar is less complex, and at the same time more efficient, if it conveys more information (more meaning) with fewer forms and rules. As opposed to this kind of information-relative complexity, absolute complexity only takes forms and rules into account. This can be illustrated by McWhorter’s (2001: 127) discussion of Kikongo and Japanese. In Kikongo, there are

¹ As a mathematician, I enjoy and appreciate any opportunity to share my work with linguistic community. I presented an earlier version of this paper at the conference on Approaches to Complexity in Language, Helsinki, August 24–24, 2005. That this is now a much improved version, I am grateful to two anonymous SKY referees. My thanks are also due to Leena Kolehmainen, without whose encouragement this paper would not be in its present form.
four kinds of past tense (including completive), while Japanese has only one past tense and no grammaticalized indicator of completiveness exclusively. This is why McWhorter considers this part of the Kikongo grammar more complex than the corresponding part of Japanese. My formula for absolute grammar complexity supports this. However, speaking relatively, Kikongo cannot be classified as more complex just because it has more tenses, since each tense means a different kind of linguistic information. This information is not important in Japanese, but this does not imply that it is not important at all. For whatever reason, it is important to the speakers of Kikongo. The need for conveying more information justifies the use of more tenses in Kikongo, thus information-relative complexity of Kikongo is not necessarily greater than that of Japanese. It is one of the goals of the present paper to point out that the conveyed linguistic information should be taken into account when measuring language complexity. The purpose of the last example in the paper is to illustrate this in particular.

The simpler the grammar, the greater its efficiency. This is why I define the measures of grammar complexity and efficiency as reciprocal to each other. My concept of grammar efficiency, which goes back to Vulanović (1991), is inspired by machine efficiency. Machine efficiency can be defined as the measure of the useful output divided by the measure of the input. It is energy or work that is measured in physics and engineering, but if grammars are also considered “machines,” then linguistic input and output have to be measured. The information conveyed by the grammar is viewed as machine output and the forms and rules as machine input. This is the main idea behind the way the complexity formula is constructed. Since my approach is theoretical and model-based, once the formal grammatical model is established as a framework, I do not consider anything outside the model. Therefore, the question is how to define and measure grammatical complexity within the model. Moreover, the derived formula becomes the definition of complexity in the model. This perhaps is a luxury that only mathematicians enjoy, but working with a model enables utilization of mathematical formality and precision.

The first grammar efficiency formula (Vulanović 1991) is very elementary and it is developed further in Vulanović (1993, 2003). A somewhat modified formula is derived in a different way in the present paper. The derivation and the whole presentation is simpler and less mathematical than in Vulanović (2003), making the results more easily understandable to linguists. This is another goal of the present paper. Unlike in Vulanović (2003), the formula for measuring information-relative complexity is intro-
duced here step by step. I start with a very simple first version of absolute complexity and then use a sequence of examples that motivate more sophisticated versions until the final one is reached. The final formula takes processing difficulty and ambiguity into account, as well as the amount of the information that the modeled grammar conveys. During the derivation of the formula, I compare it to the complexity criteria by other authors. My intention is not to model everything these criteria state, but my formula agrees with the criteria on many points. One of the most significant differences is in the treatment of syntactic, semantic, and pragmatic functions (SSPFs). Several authors consider them complexifying factors, but in my model, only forms and rules are complexifying factors and SSPFs constitute the grammar output.

The rest of the paper is organized as follows. In section 2, I survey and comment on some existing results on language complexity. I introduce in section 3 the notation and a description of the formal grammatical model which serves as the basis for the formulas. The derivation of the information-relative complexity formula is presented in section 4. Section 5 contains further examples. Finally, section 6 offers some concluding remarks.

2. Language complexity according to other authors

In his book, Dahl (2004) discusses many factors which are important for linguistic complexity. To him (Dahl 2004: 25), relative complexity means the length of the additional description necessary to characterize some entity within a given theory. The theory already provides some information about the entity and its description does not have to contain this information. If no background information is assumed, the length of the full description of the entity would be its absolute complexity. Following this, Miestamo (2006a, 2006b, to appear) speaks of absolute complexity as theory-oriented, as “the number of parts in a system” or “the length of the description of a phenomenon” (Miestamo 2006a). However, he considers relative complexity the kind of language complexity discussed in Kusters (2003), where language processing/acquisition/learning difficulty is taken into account. This, therefore, means complexity relative to language users. My concept of relative complexity is something different—complexity relative to the conveyed information. In order to avoid any possible confusion, I refer to it as the information-relative complexity.

Hawkins (1994, 2004) considers language complexity without differentiating between absolute and relative complexity. His view of complexi-
ty is based on the ideas in Miller and Chomsky (1963) and Frazier (1985). Miller and Chomsky define syntactic complexity as the ratio of the number of non-terminal nodes to the number of terminal nodes in the phrase-structure tree. Frazier modifies this metric by making the node count local, i.e. by considering not the whole sentence but groups of terminal nodes and the nodes dominating them. Hawkins’ (1994) theory of Early Immediate Constituents uses a refined version of this local metric. In Hawkins (2004), he extends his work beyond phrase-structure nodes to include morphology, morphosyntax, and semantics. He states that

1. Complexity increases with the number of linguistic forms and the number of conventionally associated (syntactic and semantic) properties that are assigned to them when constructing syntactic and semantic representations for sentences. (Hawkins 2004: 9)

However, in his 2004 book, Hawkins is concerned more with grammatical efficiency than complexity, and to him, the measures of the two are not reciprocals of each other:

2. Efficiency (...) may involve more or less complexity, depending on the syntactic and semantic representations to be assigned to a given sentence and on their required minimum of complexity (...) some structures can be more efficient than others relative to this minimum. (ibid.)

Hawkins proposes three general principles of efficiency, which are described as preferences of the human processor. The principles are given in (3).

   i. Minimize Domains: The human processor prefers to minimize the connected sequences of linguistic forms and their conventionally associated syntactic and semantic properties in which relations of combination and/or dependency are processed. (Hawkins 2004: 31)
   ii. Minimize Forms: The human processor prefers to minimize the formal complexity of each linguistic form F (its phoneme, morpheme, word, or phrasal units) and the number of forms with unique conventionalized property assignments, thereby assigning more properties to fewer forms. (Hawkins 2004: 38)
   iii. Maximize On-line Processing: The human processor prefers to maximize the set of properties that are assignable to each item X as X is processed, thereby increasing Online Property to Ultimate Property ratios. (Hawkins 2004: 51)
Obviously, the kind of complexity Frazier and Hawkins consider is processing complexity, which some authors, like McWhorter (2001: 134), Dahl (2004: 39), and Miestamo (to appear: 8) feel should not be part of complexity metric. They view processing complexity as user-related and unsuitable to be part of an objective, information-theoretic concept of complexity. My opinion is that processing can be defined in an objective, theoretical way and can be analyzed as such. The metric I present here is theoretical and it has a component which depends on processing (although, contrary to Hawkins, I am not interested in the human processor). The number of parts in a system does not tell us what these parts are and how they function in the system. Similarly, judging the complexity of different phenomena based on the length of their descriptions seems too simplistic to me. We do not know what these descriptions contain nor do we know the relationship between the components that the phenomenon consists of. Juola’s (1998) computerized data-compression approach may represent the characteristics of the system better than the number of system parts, although those characteristics are only implicitly included in the measurements.

It seems inevitable to have to restrict studies of complexity from global complexity to local complexity (terms used by Miestamo (to appear)). Global complexity is the overall language complexity which requires a complete and detailed grammar. As Miestamo (2006a) points out, this is a formidable task for which we do not have adequate linguistic tools. He refers to this problem as the problem of representativity. What we can accomplish is studies of complexity of separate aspects (local areas) of grammar across languages. For instance, Miestamo (2006b) analyzes the complexity of standard negation while Nichols (1992) and Juola (1998) discuss morphological complexity. It, therefore, should not be surprising that my model only represents simple structures, although the same approach can be applied in principle to more complicated constructions. Describing the local grammatical area considered in this paper, I can say that it deals mainly with the complexity of word order and cases in simple sentences. Many other language features (like agreement and cross-reference, discontinuous constituents, pro-drop constructions, stylistic nuances, etc.) are not intended to be represented in the model. Nevertheless, the model is still capable of describing various grammatical structures, as many examples in the paper show. And, if we do not know how to measure complexity of these simple structures, how can we hope to accomplish this with the more complicated ones?
I will compare below my metric to the works mentioned above and particularly to McWhorter (2001, to appear b). McWhorter (2001) is the leading paper in a discussion of language complexity, to which the whole double issue of *Linguistic Typology*, 5:2/3 (2001), is devoted. In this paper, McWhorter proposes the following metric (McWhorter 2001: 135–137):

(4) A grammar is more complex than another to the extent of
   i. marked members of its phonemic inventory,
   ii. rules its syntax has to process,
   iii. fine-grained semantic and/or pragmatic distinctions it gives overt and grammaticalized expression to,
   iv. its use of inflectional morphology.

He modifies the above criteria in McWhorter (to appear b). This is how they are described in McWhorter (to appear a: 2):

(5) A grammar is more complex than another to the extent of its
   i. overspecification (“marking of semantic categories left to context in many or most languages, such as evidential marking”),
   ii. structural elaboration (“number of rules mediating underlying forms and surface forms, such as morphophonemics”),
   iii. irregularity.

3. The formal grammatical model

An elementary formal grammar is used to model simple sentences. It is a version of Dik’s (1997) Functional Grammar (FG), that I have used in Vulanović (2005), but I will present it this time in analytic form. I find FG convenient for the purpose of this research because it does not involve phrase-structure trees and the underlying structures that should be ordered (linearized) are directly accessible. Languages use word order to avoid ambiguity and word order is related to the parts-of-speech system (Hengeveld et al. 2004). This is included in the present formal grammar.

Only core predications of FG are modeled, with terms and satellites treated equally. The lexicon, phonology, term formation, and the FG states of affair are not represented. Only verbal predicates with fully expressed nominals are considered. This is illustrated below by the English sentence

(6) Mary was bought a book by John.
The structure of this sentence can be represented as

(7) N Pas N [by N],

where N stands for nouns (or even some noun phrases since ‘a book’ is represented simply by an N), Pas for the used passive form of the verb ‘buy’ (without explicit indication of the person, number, or tense), and where the square brackets mean that the phrase ‘by N’ is a single unit in the string of symbols in (7). When (7), which is considered a sentence, is parsed, strings of the FG semantic, syntactic, and pragmatic functions (abbreviated together as SSPFs) are assigned to each component of (7) and the result is the analysis

(8) N Pas N [by N] \rightarrow BenSubj P Go Ag.

In (8), Ben (beneficiary), Go (goal), and Ag (agent) are semantic functions and Subj (subject) is a syntactic function. Obj (object) is the only other syntactic function in FG (it does not have to be assigned in this example), but I find it convenient here to consider P (predicate) a syntactic function too. Ben and Subj are joined together to form a string of SSPFs which is assigned to the first N in (7), i.e. to ‘Mary’ in (6). Pragmatic functions are not assigned in (8), nor will they be needed in any example of this paper.

The analysis in (8) can be viewed as the result of two components of the grammar. The first one is a mapping describing individual assignments of the SSPFs, which in this example looks like

(9) N \rightarrow BenSubj, Go, [by N] \rightarrow Ag, Pas \rightarrow P.

Based solely on the mapping in (9), sentence (7) would be ambiguous since it would have two analyses: BenSubj P Go Ag and Go P BenSubj Ag. The second component of the grammar is needed to provide the permissible orders of the SSPFs. If the order BenSubj P Go Ag is the only one permitted, (7) has to be analyzed like in (8). Note, however, that many other permutations of (7) can be analyzed unambiguously as long as the relative order of BenSubj and Go is fixed. If, like in (8), BenSubj precedes Go, there are 4!/2 = 24/2 = 12 other unambiguous sentences, like Pas[by N]NN for instance.

Generalizing and formalizing the above example, we can describe a grammar as a mapping \( \Phi \) of type (9) and a set \( R \) of permissible orders of
SSPFs. On the left side of each arrow in $\Phi$, there is a single element of a set $C$ symbolizing word classes, case forms, verbs and their forms, i.e. any grammatical category that is used to convey the strings of SSPFs occurring on the right side of each arrow. Those strings are elements of another set, $F$. Note that each element of $C$ occurs exactly once in $\Phi$, whereas on the right side of each arrow there may be more than one element of $F$. This models possible violations of the One-Meaning–One-Form principle, which is important for the discussion of grammatical complexity (Miestamo, to appear).

Let $C$, $F$, and $R$ have $k$, $n$, and $\rho$ elements respectively.

From this point on, the notation for SSPFs is simplified. $S$ and $O$ are used instead of $X_{\text{Subj}}$ and $X_{\text{Obj}}$ respectively, where $X$ is any semantic function. $O$ also replaces SSPF strings starting in Go, except for GoSubj (which is rendered as $S$). This brings the notation closer to works on word order typology, which usually refer to $S$, $O$, and $V$. $P$ is, nevertheless, preserved in stead of $V$, since $V$, unlike $S$ and $O$, is not an SSPF.

The following four examples illustrate the above further. In all of them, $F = \{S, O, P\}$ (thus $n = 3$) and verbs ($V$) are used as a grammatical category conveying $P$.

**Example 1.** Let $C = \{N, V\}$, so that $k = 2$. $N$ is interpreted as either $S$ or $O$:

\[(10) \quad \Phi: \quad N \rightarrow S, O, \quad V \rightarrow P.\]

Furthermore, let

\[R = \{SOP, SPO, PSO\}.\]

This grammar, denoted by $G_1$, admits three sentences ($NNV$, $NVN$, and $VNN$), which are all unambiguous. If another string is added to $R$, some sentences become ambiguous, e.g. if OSP is an additional string in $R$, $NNV$ is an ambiguous sentence since it can be interpreted as both SOP and OSP. Therefore, if $\rho^*$ denotes the greatest possible number of orders in $R$, so that no sentence is ambiguous, then in this example, $\rho = \rho^* = 3$.

In the case of standard transitive English sentences, $\rho = 1 < \rho^*$, the only string in $R$ being SPO. Let $G_E$ denote this grammatical structure.

Let us also calculate the quantity $\rho'$ which will be needed in section 4. $\rho'$ represents the total number of all parses attempted when each permutation of each possible sentence is parsed. It is assumed here that the parsing
process is only based on the information obtained from mapping \( \Phi \) and set \( F \), and not from set \( R \). The reason for this will be explained later in example 6. Because of this assumption and because all permutations are considered, more orders may have to be analyzed than what is contained in set \( R \). It is also assumed that parsing proceeds from left to right, one element of set \( C \) at a time. For instance, using the mapping in (10), sentence NNV can be parsed in four ways: SOP, OSP, SSP, OOP. However, the parser has the information from set \( F \) that each sentence has to convey S, O, and P, and this is why the last two parses are unacceptable. In other words, if, say, S is assigned to the first N in the sentence, then O has to be assigned to the second N. There will be no attempt to parse NN as SS or OO at all. In this case, there are two parsing attempts, starting in SO and OS. Both can be completed successfully, but, in general, it is the count of all attempts, successful or not, that is used to form \( \rho' \). Since the other two permutations, NVN and VNN, are parsed analogously, there are six attempted parses in all and the value of \( \rho' \) is set to equal 6.

The idea behind \( \rho' \) is to measure how much the One-Meaning–One-Form principle is violated. The greater the extent of the violation, the greater processing difficulty. Thus, \( \rho' \) represents here processing difficulty, which is understood very formally. I have no intention of connecting this in any way with how the human parser operates. In this example, \( \rho' \) happens to be equal to \( n! = 3! = 6 \), but in general, \( \rho' \) is not the same quantity as \( n! \). Some other examples will show this. The present definition of \( \rho' \) is new. The quantity introduced in Vulanović (2003) can be used as well and it is easier to calculate. However, the new \( \rho' \) is connected better to the parsing process.

**Example 2.** This example models simple transitive sentences in languages with object marking. Set \( C \) has 3 elements (\( k = 3 \)): the nominative case (Nom) is used to convey S, the accusative case (Acc) to convey O, and V conveys P. Thus,

\[(11) \Phi: \text{Nom} \rightarrow S, \quad \text{Acc} \rightarrow O, \quad V \rightarrow P.\]

This time, \( \rho^* \) is 6 since all six permutations of S, O, and P can be included in \( R \) without creating ambiguity. The grammar with the mapping in (11) and \( \rho = \rho^* = 6 \) is denoted by \( G_2 \). It is easy to see that in this grammar the value of \( \rho' \) is also 6.
**Example 3.** Consider a grammar in which S and O are coded on the verb. There is only one nominal form, N, but there are two verbal forms, \( V^+ \) and \( V^- \):

\[
(12) \quad \Phi : \quad N \rightarrow S, O, \quad V^+ \rightarrow P, \quad V^- \rightarrow P.
\]

\( V^+ \) indicates that S precedes O and \( V^- \) means the opposite direction. This is the first example in which the same SSPF is assigned to different elements of set \( C \). Whenever this happens, the whole corresponding pair of elements from \( C \) and \( F \) is used to represent the SSPF when the orders in set \( R \) are formed. Thus, in this example the pairs are \( (V^+, P) \) and \( (V^-, P) \). These ordered pairs are necessary since by referring to \( P \) alone it would be impossible to describe the orders in set \( R \). \( R \) contains the following 6 orders:

\[
R = \{ SO(V^+, P), S(V^+, P)O, (V^+, P)SO, OS(V^-, P), O(V^-, P)S, (V^-, P)OS \}.
\]

This is the maximum possible number of orders in \( R \) without permitting ambiguous sentences, thus \( \rho = \rho^* = 6 \). Let \( G_3 \) denote this grammar.

\( \rho' = 12 \) for the following reason. There are three permutations of \( NNV^+ \) and three permutations of \( NNV^- \). Each permutation requires two parsing attempts, like in example 1. Note that although \( V^+ \) means that S precedes O, this cannot be concluded from mapping (12) or set \( F \). This information is available in set \( R \) which is not used in parsing. Ultimately, six parsing attempts are unsuccessful since the resulting orders are not in \( R \).

This is an abstract example, but it will be used to motivate one step in the derivation of the efficiency formula. Moreover, similar constructions can be found in Algonquian languages. In discourse segments of medium size, Cree (Wolfart and Carroll 1981) uses the unmarked proximate form for the more central third person, whereas all other third persons are in the marked obviative form. The agent in a sentence may be in either proximate or obviative form without having any additional marking. Word order is not used either to specify the agent, rather, it is the verbal category of direction that carries this information. One verbal form indicates that the action is from proximate to obviative and another signifies the opposite direction.
Example 4. Returning to a structure similar to $G_2$, let us suppose that there are two declensional noun classes with different nominative and accusative forms. This is represented in mapping $\Phi$ below:

$$\Phi: \text{Nom}_1 \rightarrow S, \text{Nom}_2 \rightarrow S, \text{Acc}_1 \rightarrow O, \text{Acc}_2 \rightarrow O, V \rightarrow P.$$ 

In this case, $k = 5$ and the orders in $R$ can be described simply by referring to the SSPFs, like in example 2. However, because of the convention introduced in example 3, instead of S and O, the corresponding C-F pairs are used. Let

$$R = \text{Per} \{(\text{Nom}_1,S), (\text{Acc}_1,O), P\} \cup \text{Per} \{(\text{Nom}_1,S), (\text{Acc}_2,O), P\} \cup \text{Per} \{(\text{Nom}_2,S), (\text{Acc}_1,O), P\} \cup \text{Per} \{(\text{Nom}_2,S), (\text{Acc}_2,O), P\},$$

where $\text{Per}A$ denotes the set of all permutations of all elements in a set $A$. In this grammar, denoted by $G_6$, $\rho = \rho^* = 24$. The 24 orders correspond to the 24 unambiguous sentences, obtained by six permutations of each Nom$_i$Acc$_j$V for $i = 1, 2$ and $j = 1, 2$. The value of $\rho'$ is also equal to 24. Like in example 2, so here, $\rho' = \rho^*$. This is always the case when each element of set $C$ conveys exactly one SSPF.

In the grammatical model described above, SSPFs are conveyed by the elements of set $C$ and by word order represented in set $R$. This is why throughout my work I refer to the elements of $C$ and word order as (grammatical) conveyors. What they convey I call linguistically relevant information, or simply linguistic information. This is not necessarily just the SSPFs, like in the previous examples, but any other information that sentences of a language have to convey. Tense, for instance, is considered in example 13 as this kind of information. There is a great variation across languages in terms of what linguistic information they consider necessary to convey. From the point of view of mathematical formalism, it suffices to say that anything that is placed in set $C$ is a “grammatical conveyor” and anything in set $F$ is “linguistic information.” We may think of set $C$ as of a set of linguistic categories or forms and of set $F$ as of their meanings. Syntactic rules are contained in set $R$.

4. From absolute to information-relative language complexity

A grammar complexity formula, based on the above grammatical model, is derived in this section. It seems reasonable to start the construction of the
formula from grammatical conveyors. As for the conveyors in set \( C \), their greater number implies greater complexity. This is in agreement with (1), which states that complexity increases with the number of linguistic forms. Criteria (5i) and (5iii) imply the same (among many other things). The rationale behind criterion (4iv) is that inflection is usually a complexifying factor because of its effects upon a grammar over time and “the fact that some inflection, such as gender marking and declensional noun classes, does not correspond to concepts expressed by all grammars, but is instead purely supplementary to a grammar’s machinery” (McWhorter 2001: 138). As example 4 shows, declensional noun classes increase the number of elements in \( C \).

Word order, as a conveyor, involves more rules if it is less free, i.e. if there are fewer elements in \( R \). Gil (2001: 344) also treats the free word order of Riau Indonesian as a feature indicating a less complex grammar. McWhorter (2001) does not dwell on word order too much, except when talking about word order in questions in Tsez and Saramaccan. However, his criteria (4ii) and (5ii) indicate that complexity increases with the number of rules, which certainly include word order rules as well.

Therefore, complexity (here, I start identifying complexity with the formula under development) is directly proportional to \( k \) and indirectly proportional to \( \rho \). Probably the simplest formula of this kind is

\[
AC'' = \frac{k}{\rho},
\]

where AC stand for absolute complexity, while " indicates that this definition is two steps away from the final formula for AC.

Let \( AC''_i, i = 1, 2, 3, 4 \), denote the values of \( AC'' \) for the corresponding grammars \( G_i \) of the previous section. It is easy to see that

\[
AC''_1 = \frac{2}{3}, \quad AC''_2 = AC''_3 = \frac{3}{6} = \frac{1}{2}, \quad \text{and} \quad AC''_4 = \frac{5}{24}.
\]

Simple transitive English sentences are even more complex since for this structure, \( AC''_E = 2/1 = 2 \).

It is immediately clear that the above results are unacceptable. \( G_4 \) is obviously more complex than \( G_2 \), but \( AC''_4 < AC''_2 \). Moreover, the values of \( AC''_2 \) and \( AC''_3 \) are equal, even though the \( G_2 \) mapping (11) looks
simpler than (12) in G3. Intuitively, it even seems that G1 is simpler than G3, but AC''1 > AC''3. Therefore, the formula for AC should be modified so that these inconsistencies can be resolved.

One of the problems with AC'' is that greater values of k often imply greater values of ρ, like in example 4. This should be compensated for by a new factor inserted on the right-hand side of (13). This new factor should also depend on mapping Φ, which reveals how the conveyors in set C are used and whether the One-Meaning–One-Form principle is preserved or not. In case of the latter, like in (10) and (12), sentence processing is more difficult and greater complexity should be assigned to such structures. All of the above is covered by the number of attempted parses ρ', the quantity already evaluated for the grammars in examples 1–4. Therefore, the next modification of the measure of AC is

\[ AC' = \frac{\rho'}{\rho} \cdot k. \]

Factor ρ' makes an important difference between the four grammars of the previous section because

\[ AC'_1 = \frac{6}{3} \cdot 2 = 4, \quad AC'_2 = \frac{6}{6} \cdot 3 = 3, \quad AC'_3 = \frac{12}{6} \cdot 3 = 6, \quad \text{and} \quad AC'_4 = \frac{24}{24} \cdot 5 = 5. \]

This corrects the previous problem since AC'1 < AC'3, AC'2 < AC'3, and AC'2 < AC'4. As for G5, its complexity is now estimated by AC'5 = (6/1)2 = 12. In G5, the ρ' factor simply cancels out the seemingly artificial increase of ρ = ρ*, whereas in G1 and G3, it modifies the complexity measure by taking violations of the One-Meaning–One-Form principle into account.

In order to continue with the derivation of the complexity formula, we have to introduce another example.

**Example 5.** Consider G1 again but assume now that all six permutations of S, O, and P are in R. In this grammar, denoted by G5, ρ is increased to ρ = 6 and AC'5 = (6/6)2 = 2, which means that, according to (14), G5 is less complex than G1 although every sentence in G5 is ambiguous.

The above example shows that AC' is still not an adequate measure of grammar complexity. It should not be possible to decrease grammar com-
plexity by permitting more ambiguous sentences. This is not to say that every grammar without ambiguity is less complex than an ambiguous one, since the metric for grammar complexity also involves other factors. However, if the only difference between two grammars is the amount of ambiguity, then it is reasonable to declare the more ambiguous grammar more complex. This is not so in example 5 and this is why (14) should be modified further. The formula below takes care of the problem illustrated by example 5. It is the last iteration in the process of deriving a reliable metric for absolute grammar complexity:

\[ AC = \gamma k \quad \text{with} \quad \gamma = \frac{\rho'}{\rho - \rho_0}. \]

Here, \( \rho_0 \) measures ambiguity and if it is greater, the measure of complexity is greater. If there is no ambiguity, \( \rho_0 = 0 \) and then \( AC = AC' \). The quantity \( \rho_0 \) is defined as

\[ \rho_0 = \sum_{i=1}^{\rho} \frac{a_i}{s_i}, \]

where \( s_i \) is the length of the \( i \)th string (order) in \( R \) and \( a_i \) indicates how many components of that string are analyzed ambiguously. In \( G_5 \), each of the six strings in \( R \) has three components (i.e. \( s_i = 3, i = 1, 2, \ldots, 6 \)), two of which give rise to ambiguity. Therefore, \( \rho_0 = 6(2/3) = 4 \), which implies that \( AC_5 = [6/(6 - 4)]2 = 6 \). This puts complexity measures of \( G_5 \) and \( G_1 \) in the right relation, \( AC_5 = 6 > AC_1 = 4 \).

The present formula for \( \rho_0 \) is a slight refinement of the previous one in Vulanović (2003), which simply counts all ambiguous sentences ignoring how many words can still be analyzed unambiguously. If all components of all strings in \( R \) have ambiguous interpretation, then \( \rho_0 = \rho \) and \( AC \) in (16) is understood as infinite complexity. This is the main reason for the way \( \rho_0 \) is included in formula (16). \( \rho'\rho_0/\rho \), for instance, has the same effect as the adopted \( \rho''(\rho - \rho_0) \), in that complexity increases together with ambiguity, but \( \rho'\rho_0/\rho \) does not become infinite when \( \rho = \rho_0 \). If a language, as described by the present model, has infinite complexity, this basically indicates that it is useless—no information can be deduced from its sentences.
Frazier (1985: 135) recognizes ambiguity as a source of processing complexity. Hawkins (2004) discusses ambiguity issues related to his efficiency principles (3), particularly to (3ii) Minimize Forms. As the number of forms is reduced, “[c]hoices have to be made over which properties get priority for unique assignment to forms, and the remaining properties are then assigned to more general forms that are ambiguous, vague, or zero-specified with respect to the property in question” (p. 38). Other afore-mentioned references on language complexity do not deal with ambiguity that much. This is not surprising since there are many other factors, beyond syntax and morphology, that language can use to resolve ambiguity—Hengeveld et al. (2004) mention prosodic, semantic, pragmatic, and visual factors. However, in a simple theoretical model like the present one, ambiguity plays a significant role, as illustrated by example 5. Note also that the model does not attempt at representing all possible types of ambiguities, but only the structural ones that can typically be resolved by restricting word order. Another thing to be noted is that ambiguity, as well as the whole complexity measure, are evaluated within the grammar. Native speakers of Kikongo, to use the example from the introduction, would probably find Japanese past tense ambiguous, but ambiguity of Japanese past tense is measured based on the requirements of Japanese grammar, not that of Kikongo.

Since there is no ambiguity in grammars $G_1$, $G_2$, $G_3$, and $G_4$, their AC values remain the same as the AC' values in (15). According to this, $G_2$ is the least complex grammar of the three. However, why should $G_1$ be more complex than $G_2$? It uses one less conveyor and therefore cannot permit completely free word order without creating ambiguity. It is impossible to achieve a smaller value of AC with only two conveyors. In this sense, $G_1$ is an optimal grammar when $n = 3$ and $k = 2$, and so is $G_2$ when $n = 3$ and $k = 3$. Therefore, the two grammars should be equally complex. This already means information-relative grammar complexity since it is analyzed here how complex the grammatical structure is in comparison to an optimal structure. The optimal grammatical structure uses the same number of conveyors and conveys the same information, but has the smallest possible value of AC. The formula for information-relative grammar complexity, IRC, can be derived by scaling AC,

$$IRC = w' \gamma k,$$
where \( w' \) is a weight determined so that IRC = 1 when the grammatical structure is optimal. It is convenient to write \( w' \) as \( w' = w/n \), which gives the final formula for measuring grammar complexity,

\[
(17) \quad \text{IRC} = w' \cdot \frac{k}{n} = w \cdot \frac{\rho' \cdot k}{\rho - \rho_0} \cdot \frac{n}{n}.
\]

This formula is essentially the same as the one in (Vulanović 2003).

Let \( \Gamma_{k,n} \) denote the class of grammars that all have \( k \) conveyors in set \( C \) and \( n \) SSPFs in set \( F \). Then the formal definition of an optimal grammar is related to the following problem:

Maximize AC. Within the class \( \Gamma_{k,n} \) of grammars, find a mapping \( \Phi \) and set \( R \) so that each element of \( F \) appears exactly once in \( \Phi \), no sentence is ambiguous (\( \rho_0 = 0 \)), and \( \gamma \) has the greatest possible value.

This problem is not always solvable. For instance, if \( k > n \), \( \Phi \) cannot be constructed as required. But, if there is a solution (which does not have to be unique), then this solution is an optimal grammar which is considered to have the least possible amount of complexity in \( \Gamma_{k,n} \). The IRC measure of complexity of this grammar is set equal to 1 by the appropriate choice of the weight \( w \). The same \( w \) is then used for measuring IRC of all grammars in \( \Gamma_{k,n} \).

To illustrate this, let us consider \( G_1 \), \( G_E \), and \( G_5 \), which all belong to \( \Gamma_{2,3} \). As discussed above, \( G_1 \) is an optimal grammar in \( \Gamma_{2,3} \) and \( \text{IRC}_1 = 1 \) by definition. Setting the right-hand side of (17) equal to 1, we get

\[
w' \cdot \frac{6}{3-0} \cdot \frac{2}{3} = 1,
\]

which gives \( w = 3/4 \). The same value of \( w \) is used in (17) for all other grammars in \( \Gamma_{2,3} \). Thus,

\[
\text{IRC}_E = \frac{3}{4} \cdot \frac{6}{1} \cdot \frac{2}{3} = 3 \quad \text{and} \quad \text{IRC}_5 = \frac{3}{4} \cdot \frac{6}{4} \cdot \frac{2}{3} = \frac{3}{2}.
\]

In general, when finding an optimal grammar within \( \Gamma_{k,n} \) all possible matrices \( \Phi \) should be considered and for each, \( \rho' \) and the maximum number
ρ* of orders in R should be found. The greatest of the resulting γ values identifies an optimal grammar. The examples thus far are relatively simple and there are not too many possibilities to explore. In Γ_{2,3}, Φ has to look like in (10) and then it is easy to see that ρ’ = 6 and ρ* = 3. In Γ_{3,3}, the only choice of Φ is like in (11) and ρ’ = ρ* = 6. This is why G_2 is an optimal grammar in Γ_{3,3}. Then, since by definition IRC_2 = 1, (17) implies that w = 1 for the whole class:

\[ w \cdot \frac{6}{3} = 1 \Rightarrow w = 1. \]

G_3 is in the same class of grammars and therefore

\[ IRC_3 = 1 \cdot \frac{12}{6} \cdot \frac{3}{3} = 2. \]

As illustrated by class Γ_{3,3}, it follows that w = 1 anytime k = n. This value is then extended to the case k > n in which there is no optimal grammar. Grammar G_4 is in Γ_{5,3} and w = 1 is used in (17) to evaluate its IRC:

\[ IRC_4 = 1 \cdot \frac{24}{24} \cdot \frac{5}{3} = \frac{5}{3}. \]

Another Γ_{5,3} grammar is considered below to illustrate further how ρ’ is calculated.

**Example 6.** Let in this abstract example Φ be like in example 4, but let R have the following ρ = 12 elements:

\[ R = Per\{(Nom_1, S), (Acc_1, O), P\} U Per\{(Nom_2, S), (Acc_2, O), P\}. \]

Suppose the parsing analysis, used to determine ρ’, has access to set R. In this example, R shows also that some combinations of SSPF’s are not permitted, e.g. S conveyed by Nom_1 cannot be combined with O conveyed by Acc_2. If this information is available to the parser, then ρ’ = 12, making this grammar, G_6, equally efficient as G_4. This cannot be accepted since the restricted combinations of SSPF’s represent additional rules in R and, therefore, G_6 should be more complex, i.e. ρ’ should be greater than 12. For
this reason, the parser should only rely on $\Phi$ and $F$, and not at all on $R$. In this example, $\Phi$ shows that there are additional combinations of conveyors (not just $Nom_1Acc_1V$, $Nom_2Acc_2V$, and their permutations) that provide the information contained in set $F$. Whenever this happens, $\rho'$ should be evaluated based on an enlarged set $R$, which contains all possible combinations of SSPFs, regardless of how they are conveyed. Such an enlargement makes the present $R$ equal to the set in example 4. Therefore, $\rho' = 24$ and

$$AC_6 = \frac{24}{12} \cdot 5 = 10, \quad IRC_6 = 1 \cdot \frac{24}{12} \cdot \frac{5}{3} = \frac{10}{3}.$$  

Table 1 summarizes all AC and IRC values calculated up to this point. It shows how the scaling used to evaluate IRC changes AC to IRC. The relative position of each grammar within its class remains unchanged, but the IRC values are smaller and closer. IRC makes the grammars in $\Gamma_{2,3}$ comparable to $\Gamma_{3,3}$. This is like using the same yardstick to measure grammars that differ considerably, which shows one possible way of overcoming, on a small scale at least, what Miestamo (2006a, 2006b, to appear) calls the problem of comparability.

<table>
<thead>
<tr>
<th>Class</th>
<th>Grammar</th>
<th>AC</th>
<th>IRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Gamma_{2,3}$</td>
<td>$G_1$</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>$G_E$</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>$G_5$</td>
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<td>1.5</td>
</tr>
<tr>
<td>$\Gamma_{3,3}$</td>
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<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>$G_3$</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>$\Gamma_{5,3}$</td>
<td>$G_4$</td>
<td>5</td>
<td>1.67</td>
</tr>
<tr>
<td></td>
<td>$G_6$</td>
<td>10</td>
<td>3.33</td>
</tr>
</tbody>
</table>

*Table 1.* Complexity values for grammars in examples 1–6.

The proposed formula (17) is certainly not the only one that can be used for measuring grammar complexity in the present framework. Indeed, this formula has evolved from different versions that I have used in my work, and, even here, some modifications are proposed. However, my intention
from the very beginning (Vulanović 1991) has been to represent grammar efficiency as machine efficiency, which I have already mentioned in the introduction. In grammars, the useful output is the information that can be deduced from each sentence and the input consists of the grammatical devices that are used to convey this information. Therefore, the measure of grammar efficiency, \( Eff \), can be defined as

\[
(18) \quad Eff = \kappa \frac{\text{Info}}{\text{Con}},
\]

where \( \text{Info} \) and \( \text{Con} \) are some appropriate measures of the information conveyed and of the conveyors respectively, and where \( \kappa \) is a constant of proportionality. Since I view grammar efficiency and complexity as reciprocal to each other, (18) is nothing else but the reciprocal of the IRC formula (17):

\[
(19) \quad Eff = \text{IRC}^{-1} = \frac{1}{w} \cdot \frac{n}{k\gamma},
\]

with \( \kappa = 1/w \), \( \text{Info} = n \), and \( \text{Con} = k\gamma \). Maximally efficient grammars in Vulanović (2003) are what I call here “optimal grammars.” The process of transforming the input into the output, as modeled by mapping \( \Phi \) and set \( R \), is also represented in \( \text{Con} \) through the \( \gamma \) factor. At an earlier stage (Vulanović 1993), \( \text{Con} \) was represented as \( k + \gamma' \), with \( \gamma' \) denoting a weighted version of \( \gamma \). The switch to (19) was made because of simplicity: \( w \) is the only weight needed in this formula. In the future, a need may arise to fine-tune (19) further and include some additional weights in it. It is not clear at this stage how the new weights should be defined. I do not have enough intuition to tell me how to compare complexities of \( G_E \), \( G_5 \), and \( G_3 \) for instance. So, until there is an indication that new weights are needed, it seems reasonable to keep them as simple as possible, i.e. all of them, except \( w \) in some cases, equal to 1. Moreover, there are not so many weight-assigning possibilities as it may seem. All of them reduce to the following two: redefine \( w \) and introduce a weight for \( \rho \). If some weights are given to \( n \), \( k \), or \( \rho' \), they, together with \( 1/w \), form a new coefficient of \( n/(k\gamma) \). This is equivalent to redefining \( w \). Also, if a weight \( a \) is assigned to \( \rho_0 \), it can be factored out of the expression \( \rho = a\rho_0 \), which then changes \( w \) and the coefficient of \( \rho \).
I am not sure how to interpret Hawkins’ statement (2) and his stand on the relation between complexity and efficiency. How does efficiency “involve more or less complexity?” What is the “required minimum of complexity?” The latter may be related to my optimal grammars, but I could not find in Hawkins (2004) a definite explanation for (2). I only can comment on Hawkins’ concept of grammar efficiency. It is obviously very different from mine, since I do not use phrase-structure trees, nor do I speak in terms of preferences of the human processor, which I have no intention of emulating. There are no relations of combination and dependency in my model, so there is nothing in it like Hawkins’ principle (3i). However, my model seems to have some common points with principles (3ii) and (3iii) when the stated preferences are understood as descriptions of factors that increase efficiency. If $k$ is interpreted as the “number of forms” of (3ii), then there is an agreement between $Eff$ in (19) and (3ii) in the sense that $Eff$ increases when $k$ becomes smaller. Similarly, if $n$ is viewed as the “properties that are assignable” of (3iii), then there is a connection between (3iii) and (19) because greater values of $n$ increase $Eff$. On the other hand, there seem to be deeper differences between my concept of IRC, as given in (17), and language complexity as seen by Hawkins. While I separate forms and their syntactic/semantic/pragmatic properties as, respectively, input and output in my model, Hawkins considers them factors equally contributing to complexity, see (1). This indeed looks to me like a double count—a language has many forms mainly because they are needed to mark many SSPFs. In (17), complexity increases only if there is an unnecessary form, that is, if the same linguistic information can be conveyed with fewer forms without increasing word order restrictions. McWhorter’s criterion (4iii) (and (5i) to some extent) also lists semantic and pragmatic distinctions as complexifying factors. Such distinctions are represented in (17) by $n$ and, therefore, their increasing number diminishes(!) complexity, everything else being equal. This is because SSPFs are viewed as the output, something we get from the grammar. In reality, though, greater complexity can be expected when $n$ is increased, since greater values of $n$ are typically accompanied with greater $k$ and $\rho'$, while, usually, $\rho$ is not maximized.
5. Further examples

In Vulanović (2003), $n$, as a factor in (19), represents a more complicated system (denoted by $\mathcal{F}$) of SSPFs. In the previous examples, $\mathcal{F}$ is simply $\{F\}$, but it may be a family of several sets of SSPFs. Examples in this section illustrate what is meant by $\mathcal{F}$. There is no ambiguity in any of them, thus $\rho_0 = 0$. Also, $k \geq n$ so that $w = 1$ and the connection between AC and IRC is simply $AC = n \cdot IRC$. For this reason, only IRC values are calculated below.

**Example 7.** Consider simple intransitive and transitive sentences in the absence of object marking. There are three conveyors: N, intransitive verbs $V_i$, and transitive verbs $V_t$. An intransitive sentence conveys S and P, whereas a transitive sentence conveys S, O, and P, which means that $\mathcal{F} = \{\{S, P\}, \{S, O, P\}\}$. The corresponding mapping is

\[
\Phi: \quad N \rightarrow S, O, \quad V_i \rightarrow P, \quad V_t \rightarrow P,
\]

and $k = n = 3$. Suppose word order is rigid,

\[
R = \{S(V_i, P), S(V_t, P)O\},
\]

thus $\rho = 2$. It also holds that $\rho' = 6 + 4 = 10$, a count resulting from 6 attempted parses of transitive sentences (like in example 1) and 4 attempted parses of intransitive sentences: two of them are SP and PS (recall from example 6 that all possible orders should be taken into account, not just those permitted in $R$), while OP and PO are the other two—they are attempted before it is realized that there is no other N in the sentence (the information that $V_i$ only requires one N is stored in $R$ and is not used in parsing). The above counts give

\[
IRC = 1 \cdot \frac{10}{2} \cdot \frac{3}{3} = 5.
\]

If the number of orders in $R$ is increased to $\rho^* = 2 + 3 = 5$, which still preserves all sentences unambiguous, then IRC decreases to $10/5 = 2$. 

Example 8. In order to bring the above example closer to English, let us now assume that there is a class of verbs, denoted simply as V, which can be used both transitively and intransitively. This structure is modeled as

$$\Phi: \begin{align*}
N & \rightarrow S, O, \\
Vi & \rightarrow P, \\
Vt & \rightarrow P, \\
V & \rightarrow P,
\end{align*}$$

and

$$R = \{S(Vi, P), S(Vt, P)O, S(V, P), S(V, P)O\}.$$

It should be intuitively clear that this grammar is more complex than the one in example 7. The IRC measure confirms this: \(k = 4, n = 3, \rho = 4\), and \(\rho' = 6 + 6 + 4 + 4 = 20\), giving

$$\text{IRC} = \frac{67}{20} = 3.35.$$

The numbers contributing to the value of \(\rho'\) are: 6 attempted parses of the three permutations of NNVt; 6 attempted parses of the three permutations of NNV; 4 attempted parses of the two permutations of NVi; and 4 attempted parses of the two permutations of NV.

In this case, \(\rho\) can be increased to \(\rho^* = 2 + 3 + 2 + 3 = 10\), which reduces IRC to \(8/3 = 2.67\). This grammatical structure is still more complex than the corresponding one in example 7.

Example 9. Luiseño, a Uto-Aztecan language (Steele 1978), has free word order and makes a difference between animate (An) and inanimate (In) nouns. The unmarked form of these nouns is used to indicate S in the case of animate nouns and O in the case of inanimate nouns, which cannot be used as subjects. Animate nouns have also a marked form, denoted here as An-Acc, to indicate O. Simple transitive sentences with this structure can be modeled by the mapping

$$\Phi: \begin{align*}
An & \rightarrow S, \\
An-Acc & \rightarrow O, \\
In & \rightarrow O, \\
V & \rightarrow P,
\end{align*}$$

and by

$$R = \text{Per}\{S, (An-Acc, O), P\} \cup \text{Per}\{S, (In, O), P\}.$$

In this case, \(k = 4, n = 3,\) and \(\rho = \rho' = 3! + 3! = 12\), which implies...
IRC = 12 \cdot \frac{4}{3} = \frac{4}{3} = 1.33.

IRC > 1 since this is not an optimal grammar.

In the next three examples, simple active and passive transitive sentences are modeled together, forming a different family $F$ from the one in examples 7 and 8. In addition to S, O, and P, agent (in the sense that English passives have agents), denoted here by A, is another SSPF to be conveyed. This means that $n = 4$. The two types of sentences correspond to $F = \{\{S, O, P\}, \{S, A, P\}\}$. In all three grammars, A is marked by the agentive (Agt) case.

**Example 10.** This is an abstract example, used for a comparison to examples 11 and 12 below. It shows that one verbal form suffices for conveying $F$. Let

$$\Phi: \quad \text{Nom} \to S, \quad \text{Acc} \to O, \quad \text{Agt} \to A, \quad V \to P,$$

and

$$R = \{\text{PSO, PAS}\}.$$

It holds that $k = 4, \rho = 2$, and $\rho' = 3! + 3! = 12$, implying

$$IRC = 1 \cdot \frac{12 \cdot 4}{2 \cdot 4} = 6.$$

When $\rho$ is increased to $\rho^* = 3! + 3! = 12$, we have an optimal grammar because $IRC = 1$.

**Example 11.** Consider the structure like in English, where the phrase “by N” is meant as Agt,

$$\Phi: \quad \text{Nom} \to S, O, \quad \text{Agt} \to A, \quad \text{Act} \to P, \quad \text{Pas} \to P.$$

There are $\rho = 2$ strings in $R$,

$$R = \{S(\text{Act, P})O, S(\text{Pas, P})A\}.$$
Although here $k = 4$, like in the previous example, the conveyors are used in a more complicated way. In particular, two verbal forms are not necessary. Even if all 3 permutations of $S(\text{Act}, P)O$ and all 6 permutations of $S(\text{Pas}, P)A$ are included in $R$ (this still preserves unambiguity of all sentences), the grammar remains far from an optimal one. This is because there are other conveyor combinations that produce the information in $F$. Based on the discussion in example 6, all those combinations should be considered when $\rho'$ is calculated. Hence, the count of parsing attempts is applied to the sentences Nom V Nom and Nom V Agt and all their permutations, where V stands for both Act and Pas. This gives $2(3 + 6) = 18$ sentences in all, with a combined number of $\rho' = 2(6 + 6 + 3) = 30$ parsing attempts. Each of the three permutations of Nom V Nom has two parses (cf. example 1); the three permutations of Nom V Agt, in which Nom precedes Agt, also require two parsing attempts each (since Nom can initially be interpreted as either S or O); and finally, there is one parse of each of the three permutations of Nom V Agt in which Agt precedes Nom (Agt is unambiguously interpreted as A and then Nom has to be S). Formula (17) implies

$$\text{IRC} = 1 \cdot \frac{30}{2} \cdot \frac{4}{4} = 15,$$

which indicates greater complexity than in example 10 or in the case of active sentences alone (recall that these are modeled by $G_E$, for which IRC $= 3$).

If all possible unambiguous word orders are permitted, $\rho$ increases to $\rho^* = 2(3 + 6) = 18$. This decreases IRC to $30/18 = 5/3 = 1.67$.

**Example 12.** The structure of Maori (Hohepa 1969, Chung 1978, Vulanović 1997) is similar to the grammar in example 10, but, like English, Maori has active and passive verbal forms. Therefore,

$$\Phi: \text{Nom} \rightarrow \text{S}, \quad \text{Acc} \rightarrow \text{O}, \quad \text{Agt} \rightarrow \text{A}, \quad \text{Act} \rightarrow \text{P}, \quad \text{Pas} \rightarrow \text{P}.$$  

Fixed word order,

$$R = \{(\text{Act}, P)SO, (\text{Pas}, P)AS\},$$
is assumed for simplicity, and this enables a direct comparison to examples 10 and 11. Regardless of $R$, 24 sentences should be considered in order to find $\rho'$. This is so because there are 6 permutations of each Nom Acc V and Nom Agt V, where $V = \text{Act, Pas}$. Each of the permutations has exactly one parse, thus $\rho' = 24$. Since $k = 5$ and $\rho = 2$, it follows that

$$\text{IRC} = 1 \cdot \frac{24}{2} \cdot \frac{5}{4} = 15,$$

which happens to be the same as in example 11. The English model has one conveyor less, but greater processing difficulty. However, if in the Maori model $\rho$ is maximized to $\rho^* = 24$, which still leaves all sentences unambiguous, then the above IRC drops to $5/4 = 1.25$. This is less complex than the corresponding structure with maximized $\rho$ in example 11.

**Example 13.** This last example describes formally a situation similar to McWhorter’s (2001) comparison of Kikongo and Japanese (see the introduction).

Consider three languages which have almost identical grammatical structures, the only difference being that languages A and B have one more verbal form than language C. The extra verbal form is used in A to convey a tense which does not exist in C, whereas in B it merely duplicates the usage of another verbal form. To represent this, it is sufficient to model simple intransitive sentences (transitive sentences or intransitive and transitive sentences modeled together give similar results). Suppose word order is free and there are no ambiguous sentences, so that $\rho = \rho'$ and $\rho_0 = 0$. This gives $\gamma = 1$ in (16) and (17). Let languages A and B have $k = m + 1$ conveyors: N and $m$ verbal forms. Each of the verbal forms conveys a different tense in A, whereas B has only $m - 1$ tenses. Therefore, the system of SSPFs is

$$\mathcal{F} = \{\{S, P_i\} | i = 1, 2, ..., m\},$$

where the tenses are denoted by $P_i, i = 1, 2, ..., m$ ($P_{m-1} = P_m$ in B). For language A, $n = m + 1$, so that $\text{IRC}_A = 1$. The grammar of A is therefore optimal. At the same time, $n = m$ in B and $\text{IRC}_B = (m + 1)/m > 1$. 

Consider now language C with \( k = m \) conveyors: N and \( m - 1 \) verbal forms, each of which conveys a different tense. Since \( n = m \), it follows that \( \text{IRC}_C = 1 \).

Therefore, A and C have the same information-relative complexity and B is more complex. Absolute complexity does not reveal the difference between A and B. Formula (16) gives \( AC_A = AC_B = m + 1 \), which indicates greater complexity than in C, where \( AC_C = m \).

6. **Conclusion**

In this paper, I presented a model-based mathematical formula for measuring grammar complexity. The formula is a modification of the metric that I proposed in Vulanović (2003). Through a detailed derivation process, illustrated by many examples, I explained the formula and compared it to complexity criteria by other authors. Although the final formula is by no means unique, I was guided by the concept of machine efficiency (complexity is defined as reciprocal to efficiency) that I extended to grammars for the first time in Vulanović (1991). When there were choices how to put complexity factors together, I followed what seemed to be the simplest option. It should be pointed out that in this model there is no separate definition of grammar complexity followed by a formula for measuring it. In fact, the formula is the definition of grammar complexity in the model. This is why the only way of confirming the validity of the formula is to see what kind of numerical values it assigns to the complexity of grammatical structures that can be ranked based on intuition. Usually, when we compare two structures that are relatively similar, we can tell which one is more complex. In such cases, as illustrated by several examples, the complexity formula correctly assigns a greater value to the more complex grammar. This can be used to represent various syntactic changes, since a syntactic change can be viewed as a sequence of slightly different grammars. Then the complexity (or efficiency) of each grammar can be measured using the proposed formula, see Vulanović (1997, 2005a) for instance.

Other questions about how “realistic” the formula is are hard to answer because there is no ground for comparison. For instance, we have found complexities of two grammars, \( G_E \) and \( G_2 \), to be 3 and 1.5 respectively. Does this mean that \( G_E \) is exactly twice as complex as \( G_2 \)? Yes, in the model! However, in order to answer this outside the model, we have to know what “exactly twice as complex” means. At this stage, there is no other definition or measure of complexity that can tell us this.
The formula measures what I call the *information-relative complexity*. Example 13 shows that this kind of complexity gives more reliable results than *absolute complexity*, the other type of complexity considered in this paper. Three hypothetical languages, A, B, and C, are compared in example 13. The only difference between them is in the number of verbal forms and tenses. A and B have the same number of verbal forms and C has one verbal form less. Because of this, languages A and B have the same absolute complexity, while the absolute complexity of C is less. However, the need for an additional verbal form can be justified in A by the need to convey one more tense, but this justification cannot be extended to B, which has the same number of tenses as C. Thus, relative to the information (tenses in this case) that the languages have to convey, A is less complex than B. This shows that absolute complexity is not enough for an accurate comparison of different grammatical structures. It can be used to compare languages that convey the same type and amount of linguistic information, otherwise, comparisons based on absolute complexity may be misleading. Information-relative complexity places such languages in a correct relationship.

If it seems reasonable to compare some languages, like A and B above, on the scale of information-relative complexity, then why should not all languages be compared on the same scale? When A and C are compared like that, it turns out that they are equally complex. For information-relative complexity, the main question is how complex the language is in comparison to the simplest possible structure that conveys the same amount of linguistic information. This is what the present paper is mainly about.

**References**


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Abstract

The formation of slang words in English often relies on the combined action of ellipsis and homophony. Both these processes are also used for humorous effect, and in much the same way, in the creation of nicknames. This article explores how puns based on the ellipsis of homophones or near-homophones (i.e., ‘cut-down puns,’ as the author terms them) may give rise to nicknames and slang words. In the first part, the author focuses on so-called ‘inseparable nicknames’ and examines in detail the role of allusions and cut-down puns in their formation. The second section then describes and analyses the coinage of punning slang terms derived from proper names. To this purpose, the author delves into the main subclasses of cut-down puns and, in the final section, gives good evidence of their use by offering a glossary of name-derived slang words, both old and new, drawn from a number of sources.

Research into nicknames, like that into other aspects of onomastics, is often thought to fall beyond the scope of linguistic enquiry, as a result of which the connection between many patterns of word-formation which generate both nicknames and slang words is not fully understood. Besides performing the same social functions (see Ashley 1989: 48–49; de Klerk and Bosch 1999), nicknames and slang share a number of morphological and semantic processes (for example, suffixation with -y – -ie – -ey, as in Smithy and Brucie, and ironic reversal of meaning, as in Curly for a bald fellow and Lofty for a short one), yet much of their wit and wacky charm
result from the jocular nature of other, less well-known and less well-defined mechanisms of word-formation. In this paper, I will present an exploratory overview of how one and the same form of pun—and a somewhat sophisticated one at that—is employed in the making of nicknames and slangisms, thereby demonstrating the way ellipsis and homophony can combine to generate new words. This overview is substantiated in the final section with a glossary of name-derived puns gathered from a range of primary and secondary sources.

1. Puns into names

One of the most familiar types of nickname found in English relies on the transfer of the name of a celebrity, famous person or character to a person bearing the same name (either first, middle or last name) or a homophone of it, the result being what is sometimes termed an ‘inseparable nickname’ (see Franklyn 1962: ix). This process, albeit explosively productive in those great bastions of slang which are the world of sport and the army and navy, is so commonplace in everyday English that speakers often take it for granted. Indeed, it is likely, if not quite inevitable, that a man surnamed Simpson is, at some point in his life, given the nickname Homer, after the lazy, beer-drinking, doughnut-loving character in the cult cartoon series The Simpsons. The chances are that one surnamed Barber is nicknamed Ali—a no-brainer really, courtesy of Ali Baba of Forty Thieves fame—and one whose first name is Elvis may sooner or later earn the handle Presley, even if his voice, his looks and his pelvis are not particularly gifted.1

Easily predictable as all these examples are, the link between a nickname and its original source name may in some cases be blurred through certain, non-rule-governed transformations on the formal level. Australian journalist and broadcaster Annie Warburton (1997) gives the example of an acquaintance of hers whose middle name, D’Arcy, prompted the nickname Dooges through a two-stage chain of associations: D’Arcy gave rise to Darcy Dugan, after an infamous Sydney criminal, and this was eventually shortened and corrupted to Dooges.

This form of jokey allusion is partly akin to another, much Wittier pattern of nickname formation which carries the pun a step further. The

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1 This nicknaming process is, of course, not unique to English. The Finnish boxer Amin Asikainen is known in sporting circles as Idi, after the late Ugandan dictator Idi Amin. I owe this example to an anonymous reviewer.
surname Morter is a good case in point. Its almost inevitable association with the sobriquet Bricksan stems from the fact that Morter is a homophone of mortar, a word often occurring in the binomial bricks and mortar (Franklyn 1962: s.v. Bricks). Following this convoluted principle, the England rugby legend Martin Offiah has come to be known as Chariots because his last name happens to sound very much like the second part of the film title Chariots of Fire. Likewise, the Australian cricketer Steve Waugh was given the nickname Tugga because his surname is phonetically identical to the second constituent of the compound tugga war (a colloquial rendering of tug of war). As with rhyming-slang nicknames (e.g. Fruit ‘Reg,’ from Fruit and Veg), here the wit and lure of the moniker reside not so much in its formal oddity as in the cryptic link between the dropped element and the target word.

As one might expect, the creative potential of this pattern is nowhere exploited more fully than in literature. In Kevin Sampson’s Outlaws one of the characters is dubbed Moby because ‘his dick was half deformed’ (Sampson 2002: 12), thus playing on the title and eponymous whale of Herman Melville’s Moby Dick. On the same lines, in Emanuel Derman’s memoir My Life as a Quant we are told that one of the characters used to call a Pakistani programmer Mander on the grounds that ‘his true name was Salah, reminiscent of Salamander’ (Derman 2004: 138).

2. Names into puns

Going beyond these witty monikers, the process described here illustrates a larger category of word-formation whose natural breeding ground is to be found in the pun-laden domain of slang. Take the British slangism Frank, namechecking the late avant-garde rock pioneer Frank Zappa, whose meaning of ‘TV remote control’ derives from a pun on the homophones zapper and Zappa. Punning being the tricky thing that it is, the general architecture of these ‘cut-down puns’ allows for at least three major variations, depending on the part of the phrase which is left out. To wit:

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2 Interestingly, his twin brother, Mark Waugh, was known for a while as Afghanistan or Afghan (‘the forgotten Waugh’) (see Delahunty 2003).

3 This was the nickname of notorious London gangster Reg Kray (Woolard 2003: 192). Believe it or not, this mechanism also accounts for H, one of the nicknames of footballer David Seaman: H derives from Harry Monk, which rhymes with spunk, which is a synonym of semen, which is a homophone of Seaman. This and other types of hidden puns are analysed in detail in Lillo (in press).
Type 1: \( A + (B) = \) a homophone of the elliptical, final \( B \)

Example: Michelle (Pfeiffer) = ‘in the jargon of cricket, a five-for (i.e., five wickets taken in an innings).’

Type 2: \((A) + B = \) a homophone of the elliptical, initial \( A \)

Example: (Charlie) Bronson = ‘charlie’ (cocaine)

Type 3: \( A + (B) + C = \) a homophone or ‘semi-homophone’ of the elliptical, medial \( B \)

Example: Richard (Milhous) Nixon = ‘house’ (music)

Not surprisingly, though, when it comes to punning, unpredictability is the name of the game. And this not only because the variations on a given theme are potentially endless (John B. and Roy are but two of the possible Irish puns on ‘keen’), but because the formal make-up of certain puns can change in unsettling ways. Such is the case of the last example above: the target homophone ‘house’ can be disguised as Richard Nixon, but also as Richard or, more overtly, Richard Milhous (sometimes misspelled Millhouse), as illustrated in the following quotation.

Too many [DJs] seemed po-faced cunts with no spirit, and it showed in the Richard Millhouse. Ye cannae gie other cunts enjoyment if you cannae enjoy it yourself. ¶ One afternoon ah was settling down to a bit of Richard Nixon when the door went. Ah had the music on low, but ah still thought it was the yuppie cunts across the landing who complained about anything and everything. ¶ [...] Ah went back inside, wrapped it on the Richard and headed oot tae the shops tae get the ingredients for the soup. (I. Welsh 1997, Ecstasy, pp. 176 and 177; italics mine)

Whether a slang pun is curtailed or not is, by and large, a matter of usage or, in some cases, individual preference. Some puns, like Michelle ‘a five-for’ (from Michelle Pfeiffer), are always shortened, others are invariably used in full (in which case, of course, they do not qualify as cut-down puns), and still others, like Richard itself, fall between stools. One may reasonably think that, in the absence of contextual cues, all cut-down puns are liable to be expanded or ‘restored’ to their full, supposedly original form; still, the truth is that many of them, having been coined as quasi-
euphemisms (Crespo 2007: 223), appear to have always been used elliptically.

Compounding this is the fact that not all cut-down puns are based on homophones. Some are formed from colloquial pronunciations or near-homophones (the more far-fetched the better), thus enhancing the humorous effect. A wonderful specimen based on a colloquial, slurred pronunciation is  *Kipling*, the pun hinging on the pronunciation of  *ruddy hard* as if it were spelt  *Rudyard*. Another favourite of mine, first brought to my attention by slang lexicographer Terry Victor (personal communication, 12 April 2005), is the word  *Marlon*, whose meaning of ‘brandy’ is established via the name of the Hollywood star Marlon Brando.

For all this, full or partial homophony does not have much effect on the predictability of meaning, since it sometimes happens that the elliptical element itself takes on a figurative meaning or is to be interpreted in a rhyming-slang sense. Witness  *Trevor* for ‘hamburger,’ after British broadcaster  *Trevor McDonald*, and the Cockney  *Lionel* for ‘penis,’ derived from the name of the US jazz legend  *Lionel Hampton* and ultimately from the rhyming slang  *Hampton (Wick)* ‘prick.’ To be sure, the inherent playfulness of this process accounts for at least some of the humour behind the nonce slangism  *Bristol*, as used by the late comedian and punmeister Ronnie Barker in a celebrated sketch of the 1970s:

> And he would put on his almond rocks [= ‘socks’] and his Dicky Dirt [= ‘shirt’] and his round the houses [= ‘trousers’], and set off down the frog and toad [= ‘road’] until he reached the outskirts of the Bristol [= ‘city,’ from the rhyming slang  *Bristol City* ‘titty’]. (‘A Sermon in Slang,’ BBC TV, 1977)

### 3. About the glossary

As exhaustiveness is an unattainable ideal (of the making of many words, to paraphrase Ecclesiastes, there is no end), the glossary below aims to give but a taste of the category of words I have examined in the previous section. All these words have been attested in primary and/or secondary sources and some of them are underpinned by citations (both printed and oral). Given the paucity of printed evidence of this part of the lexicon (as of slang in general) and the partly serendipitous nature of the citation-

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4 Crespo’s concept of ‘quasi-euphemism’ corresponds to what Allan and Burridge (2006: 39) refer to as ‘euphemistic dysphemism,’ i.e. a euphemistic locution whose illocutionary force is dysphemistic.
gathering process, these citations do not necessarily correspond to the earliest recorded use of the words, though I am positive that at least a handful of them have not been recorded elsewhere.

A mere perfunctory glance at the quotations will reveal that, like any other solo lexicologist-cum-slang sleuth, I am constrained not only by my sources, but also, need I say, by my own reading preferences. The Ross O’Carroll-Kelly series of books by Irish writer Paul Howard (O’Carroll-Kelly 2003, 2004, 2005, 2006, 2007) is one of my favourites. Despite the humorous, satirical nature of these books, Howard’s finely tuned ear for the dialect of rich South Dublin kids (or ‘D4 heads,’ as they are called by northsiders) makes them a valuable source for the study of Dublinese ‘as she is spoke’ today by the young, one of its most outstanding features being, as it happens, the use of rhyming slang and cut-down puns. For the sake of brevity and ease of reference, the secondary sources in which I have attested some of the puns in the glossary are identified by the following abbreviated titles. Their full bibliographic references are given at the end of the article.

B – Puxley 2003       FW – Dickson 2007
BS – Share 2003      JD – Dunn 1997
DCS3 – Thorne 2005   LYS – Lane 1966
DRS – Franklyn 1961  RPR – Roger’s Profanisaurus Rex 2005
DSUE8 – Partridge 1984 SE – Elmes 2005

4. **Glossary**

**Alan.** A very good-looking car. (SE) is used by car salespeople. From British (Birmingham use). The term British boxing champion Alan

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5 The relationship between cut-down puns and rhyming slang is the *leitmotiv* of Lillo (2006). For a full discussion of the origins and development of rhyming slang in Ireland see Lillo (2004).
Minter (b.1951), the word *minter* being interpreted in the slang sense ‘an attractive person or thing.‘

**Ali.** A barber. *Also Alley.* (LYS)


**Annie.** A three-ton lorry. (B) *Also,* more commonly, used in full: *Annie Laurie* (DRS, DSUE8).

British. From the title of a traditional Scottish song. As pointed out by Franklyn (1961), the expression was coined by soldiers during World War I, after which it soon fell into desuetude. *Annie Laurie* was also used during World War II for ‘a bus conductress’ (Partridge 1984; Green 2005; cf. Franklyn 1962).

**Basil.** Forty pounds. (B)

British. From Basil Fawlty, the lead character in the classic BBC sitcom *Fawlty Towers.*

**Bonnie Prince.** Charlie (= cocaine). *Also Bonnie Prince.* (NP)

British. From Bonnie Prince Charlie, the nickname of Charles Edward Stuart (1720–88).

**Bronson.** Charlie (= cocaine). (NP)

British and Irish. From the British criminal Charlie Bronson (b.1952).

**Cecil Day.** See Daniel Day.

**Christian Andersen.** Hand.

Irish (Dublin use). From the Danish writer Hans Christian Andersen (1805–75).

► Suddenly I’m wondering, roysh, whether this is one of those countries where they, like, cut your focking Christian Andersens off for basically robbing shit. (R. O’Carroll-Kelly 2005, *The Curious Incident of the Dog in the Nightdress*, p. 153)

**Claus.** A barbecue.

British. From the notorious Nazi war criminal Klaus Barbie (1913–91), also known as the ‘Butcher of Lyon.’

► ‘Come over for a Claus’ (as in Barbie, the French war criminal), he’ll say, and we do, but more for the pleasure of his company than his culinary skills. (*Spectator*, 9 September 2006)

**C.S.** See next entry.

**Daniel Day.** The Luas (the name of Dublin’s light railway system). *Also Danny Day.*

Irish (Dublin use). From the British film actor Daniel Day-Lewis (b.1957). Always used with the definite article: *the Daniel Day.* The word, along with its synonyms *Cecil Day,* C.S. and *Jerry Lee* (after Cecil Day-Lewis, C.S. Lewis and Jerry Lee Lewis respectively) is first recorded in *The Irish Times*, 7 July 2004.

► It seems that the new Luas will not long escape the attention of Dublin wits. Already it has variously been called “The Jerry Lee;” “The Daniel Day;” “The C.S.” or, as the real Dubliners say in their distinctive accent, “The Train in the Lane.” (B. Mac Aongusa 2004, *Luas: Harcourt Street Memories*, p. 15)

► The Luas—or the Danny Day, as South Dubliners have lovingly christened it—is the jewel in the area’s transport crown. (R. O’Carroll-Kelly 2007, *Ross O’Carroll-Kelly’s Guide to South Dublin*, p. 68)
Denis. A hickey (= a love bite).
Irish (Dublin use). From the Irish rugby player Denis Hickie (b.1976).
► I’d actually prefer a dirty big Denis on my neck to all these focking mossie bites[.] (R. O’Carroll-Kelly 2004, PS, I Scored the Bridesmaids, p. 88)

Edgar Allans. The police.
American. A pun on the name of the American writer Edgar Allan Poe (1809–49) and the slang po-po ‘the police.’ Usually with the definite article: the Edgar Allans.

Frank. A zapper (= a TV remote control). (DCS3)
British. From the American rock star Frank Zappa (1940–93).
► There are not many products we have not even troubled to name. But the television remote control unit, a functional description, became “the remote,” and there we left it. [...] ¶
A year or two ago, Radio 4’s Word of Mouth brought this omission to the attention of its listeners. They responded in fine form. There was the Flat Controller, the Frank (Zapper), the Yentob (the BBC controller). (New Statesman, 18 December 1998, p. 92)

Frito. A good lay (applied to a woman).
(NP)
American. From Frito-Lay™, the well-known US manufacturer of snack food products.

Harold. A loid (= a thin piece of pliable plastic or a credit card used by housebreakers to open a door lock).
(CDS2, DSUE8, NP) Also used in full: Harold Lloyd (B, CDS2, DSUE8, NP, SC).
British. Used since the 1950s; now obsolete. From the American silent film comedian Harold Lloyd (1893–1971).
► Harold (Harold Lloyd) is celluloid, an instrument of housebreaking, and “Elephant” equals “Elephant and Castle” (pronounced “Carsel”) which means a parcel. (J. Gosling 1960, The Ghost Squad, p. 24)

Harrelson. A woody (= an erection).
Irish (Dublin use). From the US film actor Woody Harrelson (b.1961).

Jan’d. Hammered (= drunk). (NP) Also used in full: Jan Hammered (NP).
British. From the Czech-born keyboardist and composer Jan Hammer (b.1948).

J. Edgar. Hoover.
Irish (Dublin use). From J. Edgar Hoover (1895–1972), former director of the FBI.
► I’m, like, running the J. Edgar over the corpet in the sitting-room. (R. O’Carroll-Kelly 2006, Should Have Got Off at Sydney Parade, p. 226)

Jerry Lee. See Daniel Day.

Jimi. A Hendrickson fly. (JD)
American. The term is used by fly fishermen. From US rock singer and guitarist Jimi Hendrix (1942–70).

John B. Keen. (BS)
► I know Fionn’s John B. on her and everything, but fock him. (R. O’Carroll-Kelly 2006, Should Have Got Off at Sydney Parade, p. 164)

Keith. A woody (= an erection).
► I’ve had a dirty big Keith on me since the second that focking Gráinne Seoige walked in. (R.

> If training-shoes provoke an excited exclamation of “Hey, man, they’re Kipling!” the wearer can rest assured that their street-credibility is intact. Slur “ruddy hard” into Rudyard, and there you have it. (Guardian, 26 September 1989, quoted in Thorne 2005)

Lawrence. To walk (a dog). (FW) Secret family word. From the US entertainer Lawrence Welk (1903–92).

> In our family you cannot say the word ‘walk’ without making our dog excited, so we now say we are going to Lawrence the dog (as in Lawrence Welk). (Naomi Klages, Clarksburg, Ontario, quoted in Dickson 2007)

Lionel. Hampton (= penis). (B) British. From the US jazz musician and composer Lionel Hampton (1908–2002), whose surname is also the shortened version of the rhyming slang Hampton Wick ‘prick.’ Thence the phrase to larrup one’s Lionel ‘to masturbate.’

LL. Marijuana. (NP) British. From LL Cool J, the stage name of US rapper and film actor James Todd Smith (b.1968). The pun is based on the interpretation of Cool J as an abbreviation of ‘cool joint.’


> Getting to the bar’s going to be trouble / So the Marlons will have to be doubles[.] (Lyrics to ‘Too Much Brandy,’ by Mike Skinner—aka The Streets—, from the album Original Pirate Material, 2002)


Michelle. In the language of cricket, a five-for (i.e., five wickets taken in an innings). (NP) British, Irish and Australian. From the American film actress Michelle Pfeiffer (b.1958).

> It has become the fashion for bowlers who capture five wickets in an innings to say that they have taken a Michelle. (Independent on Sunday, 13 September 1998, p. S12)

> During their last tour of England, the Australians clearly had discussed this, and decided that any bowler with a Michelle, as they call it (you work it out), should take the ball and raise it aloft, much as the Statue of Liberty with her torch, or Andy Flintoff with a slip catch. (Guardian, 31 July 2004)

Moses. Kip (= sleep). (DCS3) British. From the Kenyan athlete Moses Kiptanui (b.1970). The word is used as both noun and verb.


> In 1976 when Nadia Comenici [sic] was a household name, ‘come and eat’ sounded like Comaneci so our family just started calling Nadia when everything was ready to eat. We still use it. (Mar Baeb, Oneida, Wisconsin, quoted in Dickson 2007)

oliver! Twist! (An exclamation of contempt that accompanies the obscene gesture popularly known as
‘the finger’ or ‘the one-finger salute’). (NP) Also Oliver Twist! (NP).
British. After the hero of the eponymous novel (1838) by Charles Dickens.

Pauline. A foul mood.
Irish (Dublin use). From the EastEnders character Pauline Fowler, played by Wendy Richard.
► [S]he just, like, pulls away from me, roysh, and I’m just there going to myself, Oh my God, this one is in a Pauline now. (R. O’Carroll-Kelly 2003, The Teenage Dirtbag Years, p. 39)

British. An item of possibly synthetic slang formed from the name of the 37th President of the United States, Richard Milhous Nixon (1913–94).

Robert. Money. Also used in full: Robert Dinero (CDS2).
British and American. From the American film actor Robert De Niro (b.1943), whose surname is near-homophonous with the Spanish dinero ‘money.’ Both the cut-down pun and its expanded version are particularly popular among British expats living in Spain. The full form has also been in use among American teenagers since the 1990s (Green 2005) (e.g., ‘Web sites like Hot Wired and Suck are tres hip and edgy, but they don’t bring in any Robert Dinero, if you know what I mean.’ Websight Magazine, December 1996).
► Robert is not coming in yet. (Recorded, Alicante, January 2000)

Rolf. Arris (= arse).
British. From the Australian entertainer and artist Rolf Harris (b.1930). The word arris is either a euphemistic remodelling of arse or a shortening of Aristotle, itself rhyming slang for ‘bottle,’ which is in turn an abbreviation of the rhyming-slang phrase bottle and glass ‘arse.’
► That was the kick up the Rolf they needed to sort themselves out. (Recorded, London, March 2004)

Roy. Keen.
Irish (Dublin use) and British. From the famous Irish footballer Roy Keane (b.1971). See also John B.
► Jade was not too Roy on him, I’m afraid. (Recorded, Glasgow, January 2006)

Savalas. Telly.
Irish (Dublin use). From the Kojak star Telly Savalas (real name Aristotle Savalas; 1924–94).
► Everything’s, like, moving, like when your Savalas is focked and the picture keeps moving up and up. (R. O’Carroll-Kelly 2005, The Curious Incident of the Dog in the Nightdress, pp. 8 and 9)

Sir Paul. A condom. (B)
British. From the former London Metropolitan Police Commissioner Sir Paul Condon (b.1947).

Trevor. Hamburger.

up the Ballyjames. Up the duff (= pregnant).
Irish (Dublin use). From the Irish town of Ballyjamesduff, Co. Cavan. A synonym is up the Damien, from the Irish footballer Damien Duff (b.1979).
I don’t know what it is, roysh, but I just find it so easy to talk to Trevor and I end up spilling my guts out to him about everything, roysh, we’re talking the night I broke my duck with Tina, my old pair buying her off when they found out she was up the Ballyjames and the whole thing coming out at the reception. (R. O’Carroll-Kelly 2005, The Curious Incident of the Dog in the Nightdress, p. 33)

Other bits that I’ve been able to piece together are that Tina’s old man rang the gaff when he found out his daughter was up the Damien [.] (R. O’Carroll-Kelly 2005, The Curious Incident of the Dog in the Nightdress, p. 13)

Winona. The Ryder Cup.
Irish (Dublin use). From the US actress Winona Ryder (b.1971).

Didn’t see you at the Winona last weekend. (R. O’Carroll-Kelly 2007, Ross O’Carroll-Kelly’s Guide to South Dublin, p. 253)

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The volume under review contains the proceedings from an international workshop The connection between areal diffusion and the genetic model of language relationship, held at the Research Centre for Linguistic Typology at the Australian National University in 1998. The book includes an introduction by the editors and fourteen papers addressing problems of areal and genetic relationships between languages from various points of view. The papers have a theoretical orientation, even though nearly all of them draw their data from case studies on languages in a particular linguistic area. The regions covered by the contributions include Australia, New Guinea, East and South-East Asia, Anatolia, Amazonia and Sub-Saharan Africa.

The book begins with a lengthy introduction, where the editors Aikhenvald and Dixon summarize in detail the theoretical questions the volume deals with. First, they list five principally possible explanations for similarities between languages: 1) universal properties and tendencies, 2) chance, 3) borrowing and diffusion, 4) genetic retention, and 5) parallel (convergent) development. They maintain that “the hardest task in comparative linguistics is to distinguish between these five kinds of similarity,” and rightly note that “the ‘parallel development’ explanation for some kinds of similarity between languages is not always paid attention to” (p. 4).

Aikhenvald and Dixon quite vehemently criticize the family tree model (p. 4–9). While all the criticism they present is in principle legitimate, the section nevertheless seems misplaced; it is not clear who is argued against, as the simplifications and limitations involved in the tree model have already been recognized for a long time, and hardly any modern comparative linguist suggests that the family tree ought to be applied “as the only (or as the main) means of describing relationships between languages” (p. 1). Many of the problems discussed by the editors
have, in fact, already been recognized by previous generations of scholars (see e.g. Bloomfield 1933: 311–318).

As a response to the perceived (and well-known) limitations of the family tree model the editors offer ‘punctuated equilibrium,’ a model of linguistic development outlined by Dixon in his book *The Rise and Fall of Languages* (1997); the term ultimately derives from the paleontologists Eldredge and Gould (1972), who applied it to their somewhat similar model of biological evolution. According to Dixon, family trees are valid only during periods of ‘punctuation,’ where a previously stable and diverse ethnolinguistic situation is suddenly altered by some cataclysmic event, such as a natural disaster, the emergence of an aggressive political or religious group, striking technical innovations, or an expansion into previously uninhabited territory (Dixon 1997: 67). As a result, one language will expand to cover a wide area and consequently diversify into several daughter languages. In a period of equilibrium, however, diffusion of linguistic features between languages takes over, as linguistic expansions take place only on a small scale or not at all. As a result, the original genetic connections between languages could eventually become completely obscured by linguistic diffusion.

Dixon’s 1997 book has, in fact, been chosen as the “position paper” for the workshop from which the current volume derives. Even so, the majority of the contributions in the present volume do not directly address the punctuated equilibrium model. On the other hand, Dixon’s model has already invoked much discussion as well as some rather vehement criticism elsewhere (e.g. Campbell 2003: 48–51).

The first paper by Peter Bellwood, *Archaeology and the Historical Determinants of Punctuation in Language-Family Origins*, is the only archaeological contribution in the volume, and regrettably also the linguistically weakest one. Bellwood defends the ‘Farming / Language Dispersal hypothesis,’ according to which widespread language families usually have their origins in periods of agricultural dispersal; in his view this could be equated with Dixon’s concept of ‘punctuation.’ This theory has been heavily criticized (cf. Bellwood and Renfrew 2002), and e.g. Campbell (2002) has shown that there is essentially no clear correlation between agriculture and the spread of language families. Bellwood himself admits that there are all kinds of exceptions to the hypothesis (pp. 33–34)—e.g. Athabaskan, a widespread North American language family with no agriculture, and New Guinea Highlands, a region with very ancient agriculture but no widespread families. Even so, rather than admitting that
the numerous counterexamples falsify the idea, he still sees the theory strong enough to allow him to connect the spread of Proto-Nostratic with the earliest agricultural populations spreading from the Levant (p. 36). As the Nostratic affinity is in itself a fringe theory based on near-zero evidence, such speculation hardly lends credence to the model.

The next contribution is Calvert Watkins’s paper *An Indo-European Linguistic Area and its Characteristics: Ancient Anatolia. Areal Diffusion as a Challenge to the Comparative Method?* Watkins examines the linguistic features shared by the Indo-European languages of the Anatolian branch and the neighboring but genetically unrelated Hattic and Hurrian. According to Watkins, such features emerged through diffusion within an ancient Anatolian Sprachbund, but the mechanism of diffusion was in many ways different from the situation envisioned by Dixon in his equilibrium scenario. The convergence of the languages did not take place during millennia of gradual evolution, but instead the linguistic area formed quite rapidly and the languages in it underwent genetic differentiation at the same time, counter to what the model of punctuated equilibrium presupposes. It follows that the comparative method remains valid in such situations, and linguistic history can be worked out applying it.

Also modern Anatolian languages are represented in this book by Geoffrey Haig’s paper *Linguistic Diffusion in Present-Day East Anatolia: From Top to Bottom*, which examines the diffusion of various syntactic-pragmatic features between Turkish and the minority languages Laz, Zazaki and Kurdish. On the basis of his results, Haig points out that diffusion seems to proceed in a particular order through the domains of language: according to him, “linear alignment will proceed from larger to smaller units, starting perhaps with the narrative organization, means of expressing direct speech, topic introduction and tracking, and progressing down through clause coordination, subordination, and constituent order in the clause” (p. 219).

Australian languages are subject of two contributions. Dixon’s paper *The Australian Linguistic Area* provides a very informative overview of the typology and linguistic geography of the Australian languages. As for the diachronic interpretation, Dixon vehemently criticizes the widely accepted Pama-Nyungan hypothesis, according to which the majority of the some 250 Australian aboriginal languages form a single language family, excluding only a few smaller groups of languages spoken in the northern parts of the continent. He shows that the Pama-Nyungan hypothesis was initially based on methodologically dubious lexicostatistic calculations, and
argues that no consistent evidence has come forth in later research. Dixon maintains that “we can recognize a number of low-level genetic groups (...) each due to recent expansion and split but on a small local scale. There is no clear evidence for higher-level genetic grouping” (p. 64). In his view, the Australian linguistic area developed over a very long period of equilibrium with only minor punctuations on a local scale, and the resulting diffusion has blurred the original genetic relationships to such a degree that the comparative method is incapable of uncovering higher-level groupings any longer, if such indeed exist; this he characterizes as “a completely different linguistic situation from those reported from anywhere else in the world” (p. 88; see also Dixon 2002).

An outsider to the Pama-Nyungan debate gets the impression that two issues have become to some extent confused in it: the validity of Pama-Nyungan as a genetic entity on the one hand, and the applicability of the comparative method in the field of Australian historical linguistics on the other. The first of these questions is naturally a matter for specialists in Australian languages to decide, but some general remarks can nevertheless be made here. While it seems evident from Dixon’s criticism that the Pama-Nyungan idea was originally based on methodologically untenable lexicostatistic calculations, also well-established families such as Indo-European, Uralic and Austronesian have initially been recognized on the basis of less systematic comparisons that mainly involved lexical similarities. From this perspective, the Pama-Nyungan idea seems at least worthy of further investigation (cf. also Miceli 2004), especially as such evidence for distant genetic relationships between some Pama-Nyungan languages as has recently been presented by e.g. Alpher (2004) and O’Grady & Hale (2004) does not seem easy to dismiss.

In any case, a final validation or refutation of the Pama-Nyungan hypothesis will require a detailed application of the comparative method to all the relevant languages—no doubt a very time-consuming task due to the large number of languages involved. As much of such basic comparative work still remains to be done in the case of Australian languages, claims of the method’s limited validity in Australia seem premature. Moreover, this research situation casts doubt on the entire model of punctuated equilibrium as well. Australia is Dixon’s primary example of the effects of long equilibrium, but it seems possible that the great difficulties in discerning (or at least proving) deeper genetic connections behind the areal diffusion at least partly stem from the insufficiency of research carried out so far. In fact, the empirical basis of the punctuated equilibrium model
seems to be scarce as well; as pointed out by Koch (2004: 48–57), at this stage the model is primarily based on thought experiments rather than a detailed analysis of linguistic data.

Following Dixon’s paper, Alan Dench presents an Australian case study in his paper *Descent and Diffusion: The Complexity of the Pilbara Situation*. He discusses the contacts and relationships between the languages in the Pilbara region, an area where some twenty aboriginal languages are spoken, and which is characterized by extensive language contact and multilingualism. According to Dench, all the languages of the Pilbara region are probably genetically related, but it is difficult to determine which of the common features are due to genetic inheritance and which to areal diffusion. He discusses phonological innovations, morphophonological alterations and case-marking patterns, concluding that “None of the shared innovations (...) can be considered, conclusively, to be innovations arising in a single ancestor” (p. 130).

Dench identifies a number of factors that complicate the task of separating areal innovations from genetic retentions. Of special interest is the rarely discussed phenomenon of ‘correspondence-mimicry,’ a process whereby speakers perceive existing historical correspondences between related languages and then mimic those correspondences in loanwords. Such a procedure may produce sound correspondences indistinguishable from those exhibited by cognate items, thus rendering the detection of borrowings extremely difficult. While this phenomenon seems to occur in many languages of the world, it has been little studied so far (see Aikio 2007 for further discussion).

Dench’s paper presents highly interesting discussion on the problems of identifying areal diffusion, but it also adds to the reader’s doubts of whether the linguistic situation in Australia is so different from the rest of the world after all. Dench is certainly right in noting that “there are circumstances in which [identifying borrowing] (...) can be especially difficult and in some cases may not be possible” (p. 113), but still, none of the problems discussed in the paper seem principally different from those encountered in well-examined language families. For instance, among the Uralic languages, Saami and Finnic languages share numerous lexical and morphosyntactic features that set them apart from the rest of the family, and in many cases it is indeed altogether impossible to decide whether a particular lexical item or grammatical construction reflects common inheritance or arose through diffusion between the two branches. Even so, a common proto-language has been successfully reconstructed via the
comparative method, but setting up reliable correspondences has required decades of painstaking work. The first attempts to assess the relationship between Finnic and Saami were largely failures due to the difficulty of separating between borrowed and shared features, which reminds that initial difficulties in a situation where “there has as yet been very little detailed historical comparison of Australian languages at the lowest level” (Dench, p. 131), linguists should perhaps not yet be discouraged from trying to work out the areal and genetic connections with the received methods of comparative linguistics.

With Malcolm Ross’s paper *Contact-induced Change in Oceanic Languages in North-West Melanesia*, the book moves from Australia to Karkar Island off the coast of New Guinea. Ross presents a very interesting study on the contact of two genetically unrelated languages, the Oceanic language Takia and the Papuan language Waskia, both spoken on the Karkar Island. Due to its contact with Waskia, Takia has undergone a process which Ross calls ‘metatypy,’ i.e. pervasive calquing of syntactic and semantic patterns without borrowing actual forms. Ross argues that ‘syntactic borrowing,’ as defined by Harris and Campbell (1995), often makes up only a part of the more extensive phenomenon of metatypy which involves also semantic restructuring.

Amazonian languages are discussed by the editor Aikhenvald in her paper *Areal Diffusion, Genetic Inheritance and Problems of Subgrouping: A North Arawak Case Study*. The study treats contact-induced phenomena in Arawak languages, a family of about 40 languages spoken in a highly discontinuous area in the Amazon basin. Due to their patchy distribution in the midst of other Amazonian families, many Arawak languages show heavy contact influence from genetically unrelated contact languages; consequently, the amount of common Arawak lexical and morphological material that can be demonstrated as genetic inheritance from Proto-Arawak is rather small.

In particular, Aikhenvald concentrates on contact-induced changes in two Arawak languages, Tariana and Resigaro. Tariana is spoken in the Vaupés basin alongside genetically unrelated Tucano languages. An unusual cultural feature specific to this area is linguistic exogamy and obligatory multilingualism. As a result of the intensive language contact, Tariana has become grammatically restructured according to the model provided by Tucano languages. However, the Vaupés linguistic area has a cultural prohibition against borrowing of actual forms, and hence the number of loanwords transferred between the languages is extremely small.
On the other hand, a completely different situation is encountered in Resígaro spoken in northeastern Peru. At present, all its speakers are bilingual in either Bora or Ocaina, which belonging to the Bora-Witoto family and are genetically unrelated to Resígaro. Resígaro has been heavily restructured according to a Bora model, and basic vocabulary and even bound morphology has been extensively borrowed from this source. These two markedly different cases provide a good reminder that language contacts cannot be reconstructed only through tracing loanwords: even during intense language contact, the degree of lexical borrowing varies greatly on the basis of sociolinguistic and cultural factors, ranging from near complete lack of loanwords to almost uninhibited borrowing of basic vocabulary.

Languages of East and South-East Asia are represented by as many as four papers. James A. Matisoff’s paper *Genetic versus Contact Relationship: Prosodic Diffusability in South-East Asian Languages* deals with the historical development of prosodic systems. First, Matisoff discusses certain general methodological issues of comparative linguistics, presenting welcome criticism of methodologically dubious long-range comparisons, which he has aptly termed ‘megalocomparison’ (see also Matisoff 1990). Then he moves on to deal with the main issue of diachronic background of tonal contrasts in various languages of South-East Asia, a linguistic area well known for being ‘tone-prone.’ Matisoff shows that it is very difficult to determine whether the “infinitely various” (p. 315) tonal systems in Sino-Tibetan or Tibeto-Burman have a common origin or whether they arose through several independent developments, and that many different scenarios of tonal diffusion can be surmised. The paper ends with a long list of hitherto unanswered questions concerning the diachronic backgrounds of prosodic and tonal systems, revealing that much further research on these questions is still needed.

N. J. Enfeld’s paper *On Genetic and Areal Linguistics in Mainland South-East Asia: Parallel Polyfunctionality of ‘Acquire’* concentrates on a very specific problem of South-East Asian comparative linguistics: the diachronic analysis of a particular verb-like morpheme with the original meaning ‘to come to have,’ which shows a wide range of similar grammatical functions in several Sinitic and Thai languages. In addition to the basic lexical meaning, the morpheme has developed into a modal or aspectual marker, as well as a marker in various resultative, adverbal and potential constructions. Enfeld concludes that morphemes from at least ten distinct etymological sources have developed the same kind of
polyfunctionality in this area, which shows that the pattern of grammatical functions must have spread through areal diffusion.

Two studies concentrate on Sino-Tibetan languages. In her contribution *Language Contact and Areal Diffusion in Sinitic Languages*, Hilary Chappel argues that the family tree model works reasonably well for Sinitic languages at least in the realm of phonology, but fails to capture the effects that waves of ‘Mandarinization’ have had on many Sinitic languages on other levels of language. She concludes that in order “to reconstruct the history of a language family adequately, a model is needed which is significantly more sophisticated than the family tree based on the use of the comparative method” (p. 354). This conclusion, while in principle fully valid, seems to entail the erroneous view (shared by the editors Aikhenvald and Dixon; see above) that the family tree is supposed to depict the entire history of a language family in a comprehensive manner. In reality, the family tree model is just a representation of genetic connections between languages that have diverged from each other through language split; criticizing it for not illustrating something more is a bit like criticizing the periodic table of chemical elements for not illustrating molecules.

An even more radical stance is taken by Randy J. LaPolla in her paper *The Role of Migration and Language Contact in the Development of the Sino-Tibetan Language Family*, who appears to deny the validity of the family tree altogether. While her study discusses a wide range of interesting data, one of her conclusions is something one is not used to hearing from a professional comparative linguist. Quoting Dai (1997), she asks: “Is not possible for two languages that were not originally related to become related through intense contact?” (p. 246; LaPolla’s translation). Acknowledging the principal independence of genetic and areal relationships is, however, the theoretical methodological cornerstone of comparative linguistics, and this premise is also inherent in the comparative method (Fox 1995 *passim*). Obliterating this distinction would invalidate all results ever obtained via the comparative method, including the very existence of the Sino-Tibetan language family, which is after all the subject of LaPolla’s study.

The so-called ‘Niger-Congo’ (and to a lesser extent, ‘Nilo-Saharan’) languages of Sub-Saharan Africa are the subject of Gerrit J. Dimmendaal’s paper *Areal Diffusion versus Genetic Inheritance: An African Perspective*. Dimmendaal examines phonological and structural features that are widely spread in the Niger-Congo languages, including ATR (advanced tongue
root) vowel harmony, nasalized vowels, noun classes, and serial verbs. His conclusion is that there is relatively little evidence for morphological diffusion in African languages, and for instance, he sees noun classes in Niger-Congo languages as a genetically inherited category. For phonological and prosodic features it is more difficult to choose between genetic and areal explanations, but in any case, the comparative method remains applicable to the African languages, and regular sound correspondences can be established even between remotely affiliated language groups (such as Bantu and ‘Tano-Congo’ languages, as exemplified by Dimmendaal on p. 372).

Even so, much basic comparative work on African languages still remains to be done. Very deep genetic groupings such as ‘Niger-Congo’ and ‘Nilo-Saharan’ have been widely accepted as established language families since Greenberg’s (1966) work on African language classification, but the validity of such groupings as a whole has never been demonstrated according to the standard set by already well-studied ancient language families such as Indo-European, Uralic, Austronesian, and Uto-Aztecan. There seem to be no publications documenting regular sound correspondences between all assumed major branches of ‘Niger-Congo’ or ‘Nilo-Saharan’. The Niger-Congo grouping is also criticized by Aikhenvald and Dixon in the foreword (p. 8), and its tentative nature is apparently recognized by Dimmendaal as well; he writes that “by the criteria of regular sound correspondences (...) Niger-Congo is not a proven genetic unit” (p. 368). As in the case of Australian languages, it seems that a whole lot more low-level comparative work on African languages is needed before high-level genetic groupings can be conclusively established.

African languages are also subject of Bernd Heine and Tania Kuteva’s paper *Convergence and Divergence in the Development of African Languages*. First, the authors present an overview of certain features that characterize parts of Africa as convergence areas, such as the Ethiopia Highlands, the Kalahari basin, and the Rift Valley. In more detail they examine Nile Nubian languages, which have undergone pervasive contact-induced changes, and underline the significance of ‘metatypy’ (as defined by Ross; see above) as a pattern of contact-induced change. They even propose a new subtype of this process, ‘grammaticalizing metatypy,’ which not only involves “a certain semantic configuration or schema, but also the idea that this configuration be used for encoding grammatical meaning” (p. 408). However, the notion of ‘grammaticalizing metatypy’ seems to suffer from the general weaknesses of the currently fashionable
‘grammaticalization theory’ that is purported, among others, by Heine and Kuteva (see Campbell 2001).

The last paper in the volume, *What Language Features Can Be Borrowed?* by Timothy Jowan Curnow, differs from the others in that it is a theoretical contribution not based on any particular case study, but rather an attempt for a conclusion to this book. Curnow begins with defining borrowing in the widest possible sense, i.e. “addition, loss and retention of features under contact” (p. 415). From this point of view he points out problems in hierarchies for borrowing that have frequently been proposed in contact-linguistic literature. For instance, it is often maintained that a particular linguistic feature (such as noun classes or phonological tones) easily spreads through diffusion, but it is unclear what implications such an assumed correlation has for retention or loss: is a feature that easily diffuses also easily lost under contact, or is it, on the contrary, easily retained under contact with a language lacking the same feature? So far, there have been few attempts to solve such questions.

One can add that many of the actual constraints for borrowing that have been proposed so far seem premature. For instance, a scholar acquainted with north Eurasian languages is somewhat surprised by the discussion on the supposed difficulty of borrowing verbs (p. 415–416). While verbs seem to be resistant to borrowing in some linguistic areas, this is far from universal; for example, the Uralic languages do not seem to avoid loan verbs. The assumed avoidance of loan verbs has often been “explained” with the supposed difficulty of borrowing members of a highly inflected lexical category, but as it is properly recognized that numerous highly inflected languages freely borrow verbs, such an explanation turns out to be of little merit. To cite one example, North Saami has very many borrowed verbs, including basic verbs with meanings such as ‘to be going to,’ ‘to begin,’ ‘to stay,’ ‘to happen,’ ‘to need,’ ‘to have to,’ ‘to get,’ ‘to notice,’ ‘to find,’ ‘to use,’ ‘to want,’ ‘to stop,’ ‘to think,’ ‘to sing,’ ‘to move,’ ‘to like,’ ‘to lift,’ and ‘to lend’ (Sammallahti 1998: 226–252), as well as innumerable others. This borrowing has not been hindered either by the highly inflected nature of the North Saami verb or by the complex morphophonological alterations that are characteristic of North Saami verbs. Hence, the presumed general “difficulty” of borrowing verbs seems to be a myth based on borrowing strategies that are attested only in certain languages or linguistic areas.

In a more general vein, Curnow summarizes features that are more likely than others to be borrowed under language contact, based on the
other contributions in the volume (p. 425–433). His general conclusion, however, is rather pessimistic. As answer to his question, “What conclusions can be drawn from the development on universal constraints on borrowability on the data presented here?”, he suggests that “we may never be able to develop such constraints” (p. 434). If this is indeed the case, it implies that instead of universal constraints, historical linguists will just have to be content with searching for genuine historical explanations for the linguistic situations encountered in the world. But then again, this should not be a dismerit to any historical science.

In conclusion, one can first look how the contributions of this volume relate to the chosen “position paper,” Dixon (1997), where the theory of linguistic ‘punctuated equilibrium’ was put forward. As already noted, few of the papers in this book directly address Dixon’s model; the ones that do (especially the papers by Watkins and Ross) take a rather critical stance. Considering also the critiques published elsewhere (e.g. Campbell 2003), one can only side with this criticism. There is a need to develop more refined methods for the study of prehistoric language contact, but at the same time, there seems to be no need to abandon the comparative method as a general tool for working out genetic relationships between languages.

But ‘punctuated equilibrium’ put aside, Areal Diffusion and Genetic Inheritance: Problems in Comparative Linguistics is an excellent and very thought-provoking book. The papers introduce the reader to research in several very different linguistic areas, and despite the impressive range of linguistic phenomena covered, the contributions are written in a way that is easily accessible to a reader with no special knowledge of the languages in question. But as any book presenting many novel ideas and theoretical considerations, it will also prompt the reader to make critical remarks. One can warmly recommend this volume as food for thought to all scholars working in the field of language contact and comparative linguistics.

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Reviewed by Anastassia Zabrodskaja

`Language is all around us in textual form as it is displayed on shop windows, commercial signs, posters, official notices, traffic signs, etc.`

Durk Gorter (2006c: 1)

*The city is a place of language contact.*

Peter Backhaus (2007: 1)

1. **Introduction**

This book begins with a foreword by Bernard Spolsky, who states that Landry and Bourhis (1997) used the term *linguistic landscape* (LL) for the first time and defined it as follow: “The language of public road signs, advertising billboards, street names, place names, commercial shop signs, and public signs on government buildings combines to form the LL of a given territory, region, or urban agglomeration” (Landry and Bourhis 1997: 25).

The concept of LL has been used in several different ways: in a rather general sense for the description and analysis of the language situation in a certain country or for the presence and use of many languages in a larger geographic area (Gorter 2006c: 1). During the past decade an increasing number of researchers have started to investigate the language texts that are present in public space (see Gorter 2006a, Gorter 2006b to name just major contributions).

Backhaus focuses on urban language contact in the written medium: the languages of Tokyo’s signs. He aims to provide a first general introduction to the study of language on signs and shows what insights about multilingualism and language contact can be gained from this type of research. The book comprises six chapters. Following the main chapters, three short sections appear at the end of the book: appendix, references, and index.
2. A brief discussion on the semiotic background and terminology in LL research

In Chapter 2, Semiotic Background and Terminology (pp. 4–11), Backhaus provides the reader with a brief discussion on the etymology and varying usages of the recent term LL. He refers to the meanings of the term *sign* given by Soanes and Stevenson (2003: 1645), and draws readers’ attention to the two notions:

1. Sign is an object, quality, or event whose presence indicates the probable presence or occurrence of something else (= the semiotic sign).

2. Sign is a notice on public display that gives information or instruction in a written or symbolic form (= the public sign).

Backhaus emphasizes that the semantic differences between the two types of signs are fundamental and uses the term *semiotic sign* as opposed to *public sign*. Public signs are a specific type of semiotic sign: the name of a company attached to the front of a building indicates ‘This is the building of company X.’ There are more parallels between semiotic and public signs (see pp. 5–6).

Analyzing Peircean theory and its related theories, Backhaus then addresses the complex task of defining a public sign. Referring to the working definition of the LL term given by Bourhis and Landry (1997: 25) and giving a detailed overview of recent studies on this notion, Backhaus concludes: “due to the distinctive semiotic features of language on signs … it is reasonable to stick to the definition formulated by Landry and Bourhis rather than to expand the term to a hardly definable variety of other arenas of language use in the public sphere” (p. 10). Itagi and Singh (2002) make the distinction between ‘linguistic landscape’ and ‘linguistic landscaping,’ both abbreviated as *LL* and suggest that the gerund form means the planning and implementation of actions and place their results in noun form. Backhaus uses these terms as well, intending to provide valuable insights into the linguistic situation of Tokyo and a valuable synthesis of various aspects of multilingualism.

3. Earlier case-studies on LL

Chapter 3, Previous Approaches to the LL: An Overview (pp. 12–53) describes and evaluates previous research on signs in various places around
the world. Reviewing fundamental and pioneering works on LL, Backhaus shows their relation to one another. He finds out that the lack of a summarizing terminology has resulted in ignoring previous various studies. Conceptualizing and reviewing different linguistic groups, the author discusses language on signs in (officially) bi- and multilingual cities.

3.1 Brussels

Backhaus considers Brussels to be a classical example of a bilingual city with a French-speaking Walloon majority and a Dutch-speaking Flemish minority. Here, the use of language varies geographically: the further to the north, the more Dutch on billboards (see Tulp 1978 for a detailed discussion). This tendency seems to be dominative in the past 30 years. For Wenzel (1996) the southern parts of the city are more French than bilingual. Backhaus offers that the strict division of the two languages in their written form is an expression of the continuing conflict between the two language groups. However, on the shop signs in the centre of Brussels, English is predominant at shops offering electronic products, while French is favoured in the domain of fashion.

3.2 Montreal

Montreal is close to Brussels in its bilingual character. Here, native speakers of French prevail, at the same time being a linguistic minority in English-dominated Canada as a whole. Since the 1960s the political and legislative struggle has been imprinting on LL of the city. Results show that for signs of department stores, 90% were monolingual French whereas 39 was the per centage of monolingual French in the domain of hotels and restaurants (Monnier 1989). This leads the author to define language and community boundaries: French-speaking east of the island and the English-dominated west.

3.3 Jerusalem

Present-day Jerusalem represents two relatively homogenous linguistic and religious settings, defined by demographic data as either: (1) the western
parts, where Hebrew-speaking groups are dominated, and (2) the eastern city sections including the Old City, which are inhabited mainly by Arab speakers. According to three different approaches (Rosenbaum et al. 1977; Spolsky and Cooper 1991; Ben-Rafael et al. 2004), the presence of Hebrew, Arabic and English in Jerusalem’s LL is analysed. The main findings of these studies show notable differences between linguistic settings that are more apparent when comparing public and private signs, whereas English is perceived as a “neutral” language.

3.4 Ljouwert and Donostia

Cenoz and Gorter (2006) compare two one-street-analyses conducted in two non-national regions in Europe, one in Friesland, Netherlands and the other in the Spanish Basque Country. These two regions share the common presence of an official minority language (Basque and Friesian) co-existing alongside official majority languages (Spanish and Dutch), with English as the international language. They notice a considerable difference in the use of the minority languages relative to their presence on signs and to the demographics of these language speakers. In Ljouwert, nearly half of the population speaks Frisian, yet the minority language figures on only 3% of the observed signs and is dominant in only 2% of the signs. In contrast, while about a third of the population in Donostia speaks Basque, the minority language is present in over 50% of the signs studied and predominant in 28% of them. The research is highly original in its conceptualization of empirical research and trilingual context of a regional language, a national language, and an international language.

3.5 Paris and Dakar

Due to migration, these two places have become linguistically highly diversified places. While the multilingual French capital is a result of international migration, to Dakar, the multilingualism has been brought from the other parts of Senegal. Calvet’s (1990, 1994) comparison of the two cities shows how LL can reflect the real linguistic situation in officially monolingual settings in Europe and Africa.
3.6 Lira Town

Uganda has about 40 indigenous languages. Varieties of Lango summarised under the term of Lwo are used at lower primary school level and spoken by the majority of the population in Lira Town. English is the language of higher education. Observing a social dichotomy between official and local language, Reh (2004) presents the diachronic development of city’s LL.

3.7 Hong Kong, Beijing, Vienna, Paris, Washington

Comparing five street corners in Asia, Europe and the US, Scollon and Scollon (2003) distinguish four types of discourse in the urban space: (1) municipal regulatory discourses, (2) municipal infrastructural discourses, (3) commercial discourses, and (4) transgressive discourses. Produced by official organs, vehicular and pedestrian traffic signs, public notices, warnings and prohibitions, toponymic signs or inscriptions on utility poles are signs with municipal regulatory and infrastructural discourses. All sorts of shop signs and other identifications of businesses are subsumed as commercial discourses. The most usual example of transgressive signs is graffiti that intentionally or accidentally violate the conventional semiotics expected in a given place.

3.8 Rome

Backhaus describes two different approaches to language in signs in Rome. He concludes that the growing use of English on signs is a result of a general proclivity.

3.9 Bangkok

With a population (mostly native Thais) between six and ten million people, Bangkok exemplifies a city whose LL characterize Thai-English code-mixing.
3.10 Tokyo

Before giving an overview on previous studies of LL in Tokyo, Backhaus describes the Japanese writing system in detail: its complicated nature has been an important issue in LL research. Written Japanese is a combination of four scripts: Kanji, Hiragana, Katakana, and the 26 letters of the Roman alphabet. The author stresses the fact that the streets of Tokyo are a place of written language contact.

4. The main findings of the previous research

In Chapter 4, Summary (pp. 54–63) Backhaus underlines three questions: (1) LL by whom?, (2) LL for whom?, and (3) LL quo vadis? Discussing these questions one by one, he outlines a general framework for the study of language on signs. The first question divides signs into official and non-official items. There is the important relationship between the linguistic properties of a sign and the linguistic background of the sign writer. The second question concerns the readers of the signs: the targeted readership forms the multilingual nature of a sign. Finally, the third question provides the analysis of languages and scripts in contact.

In describing the methodology of the main studies reported here, Backhaus points out that there is a basic distinction between qualitative and quantitative approaches. He concludes that research into LL is best suited to a sound methodology.

5. A look into the LL of Tokyo

In Chapter 5, Case Study: Signs of Multilingualism in Tokyo (pp. 64–140) Backhaus concentrates on his own corpus of 2444 multilingual signs recorded in 28 survey areas. He starts out with the primary research questions and dedicates a major section of this chapter to the clear determination of the methodology. Describing the survey areas, counting the items and distinguishing between monolingual and multilingual signs, he then describes the basic results.

Following Landry and Bourhis (1997: 26–27), Backhaus classifies all government-related signs (mainly by the ward administration, the Tokyo Metropolitan Government, or an agency of the national government) as top-down signs. All other signs he considers to be bottom-up signs.
Whereas English tends to appear more frequently on bottom-up signs, Japanese is predominantly found on top-down signs: it is present in over 97% of the cases.

Although Tokyo is a largely monolingual society with only 3.6% registered foreign residents, the city presents a surprisingly multilingual landscape. Then, Backhaus answers to the question of whether a given sign in the streets of Tokyo is multilingual more with regard to people with non-Japanese backgrounds or more with regard to the Japanese host population. Borrowing terms from the musicology, he refers to this problem as part writing. Transferring the notions ‘monophonic,’ ‘homophonic’ and ‘polyphonic’ to language on signs, the author distinguishes equivalent categories:

1. Signs that display texts constituting a complete translation (or transliteration) of each other are homophonic signs;

2. In a mixed part writing style only content elements of a sign are available in two or more languages;

3. Signs with several languages that do not constitute mutual translations are polyphonic in style;

4. Signs with only one language are monophonic signs.

Backhaus decides that whenever a translation or transliteration is available, the sign has been designed in a multilingual format with people of foreign backgrounds in mind (true for homophonic and most mixed signs), whereas the absence of translation or transliteration means that the sign is a multilingual sign made for the Japanese population (a case for polyphonic and monophonic signs). Going deeper in his analysis, Backhaus determines code preference—Japanese—for 1311 items of total 1479 classified as homophonic or mixed signs. He gives a correlation between code preference and the top-down/bottom-up variable: marked code preference is a distinctive feature of non-official signs. Only six of 662 official signs display a language other than Japanese in prominent position. Thus, the analysis of code preference (through order and size) confirms a clear predominance (99.1%) of Japanese on official signs. On the other hand, non-official signs show a greater variety of languages on their multilingual signs and less than 60% of them contain Japanese. These differences are
interpreted as follow: signs of a non-official nature desire giving an impression of foreignness—real or fake. The author notes two ways, in which multilingual information on signs can come: (1) one sign contains two or more languages (thus, the multilingual nature of sign is visible at first sight), or (2) several signs contain one language each. Determining the frequency of non-visible multilingual signs in the 28 survey areas, in the course of his survey Backhaus also recorded Japanese-only signs that were not classified as multilingual but that had corresponding multilingual counterparts with the same design. It turned out that visible multilingual signs are a rather exceptional sight in Tokyo. The majority of the 28 items found to display their contents in separate frames were attached not too far from each other and facing the same direction.

Comparing multilingual signs in Tokyo and Brussels, Backhaus concludes that while in the latter the separation of the two languages can be interpreted as an expression of lingering linguistic conflict between Flemish and Walloons, the appearance of several languages within the same frame does not cause any problem in Tokyo. According to the author’s findings a considerable number of signs containing languages other than Japanese address a predominantly Japanese readership. The use of multilingualism on signs is highly appreciated.

As linguistic idiosyncrasies in English, Japanese, Chinese and Korean constitute an integral part of the corpora, Backhaus examines and classifies them. In practice, English is frequent in idiosyncrasies and can be observed in the orthographic (both graphemic and phonemic) as well as morphosyntactic and lexical level. There are a lot of examples that from a formal point of view (script and spelling) look English, whereas functionally (context) make sense when read as Japanese.

Japanese language on signs exhibit two forms of idiosyncrasies concerning: (1) the use of Braille, and (2) the transliteration of Japanese terms into the Roman alphabet. Code- and script-mixing is very usual on the lexical level.

Chinese and Korean are very different from each other with regard to graphic idiosyncrasies. While most texts of the sample classified as Chinese are written in short-style characters, Korean texts on the signs of the sample remain virtually unaffected. Official sign writers are more careful with Chinese script.

Backhaus assumes that idiosyncrasies in English and Chinese are indicative of a sign writer of Japanese origin. According to him, the
possibility that Korean texts are written exclusively by people of Korean origin is very high.

Taking an apparent-time look at Tokyo’s LL, the author uses the term *layering* for the coexistence of older and newer versions of a given type of sign. Analyzing instances of layering, Backhaus takes four important aspects into account: (1) number of languages and scripts contained, (2) amount of foreign language information, (3) occurrence of idiosyncrasies, and (4) proportion of languages and scripts. It is obvious that number of languages and scripts has been increasing. At the same time, while in most cases all necessary directions are available in Japanese and English, there are bilingual versions of the sign that are not particularly helpful to people who know the latter but not the former. The amount of English has been decreasing in linguistic idiosyncrasies. The proportion of languages and scripts on signs has been changing also: the letters that once used to abbreviate a Japanese term now are reinterpreted as referring to English terms.

6. Evaluation

Lastly, Chapter 6, Conclusion (pp. 141–146) offers answers on the three questions previously raised in Chapter 4: (1) LL by whom?, (2) LL for whom?, and (3) LL *quo vadis*?. Although these considerations reflect the findings of the study once more, this section introduces, in brief, recent developments in Tokyo’s LL.

This book is a welcome and useful addition to the study of LL, particularly for its contribution of well needed empirical studies. It shows how rich empirical data on the use of language on signs can be. This study discusses a number of major distinctions, such as official and non-official signs, code preference, visibility and non-visibility of a sign, and idiosyncrasies.

Overall, the research on Tokyo’s LL is precise in its definition and classification of empirical analysis, well-informed with regards to all categories analyzed and methodologically thorough. It is commendable that Backhaus uses both qualitative and quantitative methods in such detail in his research of Tokyo’s LL. This comparative study on language on signs is a valuable contribution to the field of multilingualism and language contact research.
To finish this review, the following quote by Backhaus was chosen to describe the challenges that LL can offer for future research:

The city is a place of language contact, (...) the signs in public space are the most visible reminder of this. LL not only tells you in an instant where on earth you are and what languages you are supposed to know, but it (...) provides a unique perspective on the coexistence and competition of different languages and their scripts, and how they interact and interfere with each other in a given place. (Backhaus 2007: 145.)

References


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Having just begun to teach a course titled “Lexis in Present-Day English” with a colleague, this book seemed a very good choice for me to review. It addresses exactly the kind of issues that I would like our students to think about: What is meaning? What is the difference between semantics and lexicography? Between a word and a concept? How do we categorise? What kind of information do dictionaries contain? This collection of articles originated at the 36th Poznán Linguistic Meeting in May 2005, which was attended by “linguists, lexicographers, translation studies theorists and practitioners, a psycholinguist and a philosopher” (p. 7). It includes eighteen contributions by mainly Polish authors, with a few exceptions.

The first and potentially leading article is by Enrique Bernárdez, who is also the first in alphabetical order. He writes on “synergy in the construction of meaning” (pp. 15–37), advocating a “kind of distributed cognition with an essential historical element” (p. 27). In other words, he wishes to see meaning created not only in and by individual brains, but through people’s interaction with each other and their environment and, moreover, developing over time. Similar ideas are also embraced by Karolina Krawczak in “Meaning as an epiphenomenon of cognition, social interaction and intercognition” (pp. 187–198) and Maria Pilar Lema Quintana and Juana Teresa Guerra de la Torre in “A study of meaning construction across cultures: An epistemological framework for cognitive translation studies” (pp. 199–216).

Apart from Bernárdez, other potentially key articles are Nikolaus Ritt’s “Meaning in a material world or How to find out what linguists think about meaning” (pp. 235–267) and Aleksander Szwedek’s “An alternative theory of metaphorisation” (pp. 313–327); these are particularly important because they question our current understanding of the relationship between language and meaning. Ritt is of the opinion that linguists are not careful enough in defining meaning, which is bad for the reputation of linguistics as an empirical science, while Szwedek suggests a correction to Lakoff and Johnson’s theory of metaphor (1980). Michal Janowski follows Szwedek in considering “schematization and valuation in abstract
concepts,” and provides an empirical corpus-based description of how abstract nouns are objectified in the English language (pp. 139–156).

Some of the most carefully written articles in this volume do not focus on questioning current practices, but on reporting research findings per se. In particular, I would like to mention Anna Cieślicka’s “Effects of literal plausibility and predictability on the suppression of irrelevant literal meanings in idiom processing” (pp. 39–61), Anna Dziemianko’s “The analytical definition in monolingual English learners’ dictionaries as a vehicle for syntactic information on verbs: A diachronic perspective” (pp. 63–89), Iwona Knaś’s “English at: Investigating its conceptualization by native speakers and Polish advanced learners of English” (pp. 157–186), and Jūratė Ruzaitė’s “Setting boundaries to fuzzy adjectives: A corpus approach” (pp. 269–291). Adam Głaz’s article on vantage theory is also informed and well-written, and serves the purpose of introducing another way of approaching language and meaning (pp. 91–112).

The editor, herself a linguist and semanticist, did not contribute a research article, but she did write the introduction, entitled “Language, meaning and scientific endeavour” (pp. 7–13), in which she stresses the “interdisciplinary character of the book” and the “complex relations between language and meaning” (p. 12). The main strength of the book seems indeed to lie in the variety of approaches which it serves to the reader in a single package. With but little imagination, one can hear the articles interact and negotiate the characteristics of linguistic meaning and meaning in general. To give an example, on page 235, Ritt asks “what sort of thing meaning is … if it is a ‘thing’ … Is it or is it not part of the physical universe?”, and on pages 317–319 Szwedek quotes an answer by Thomas Aquinas, who suggested that God talks to us through material objects because that is a language we as humans can understand, and translates another answer by a Polish philosopher, Kotarbiński, who wished to “adopt a stance in which all categories are reduced to the category of things”.

The volume is also admirably up to date, considering the short time span between the original meeting and the publication. This can be compared to such texts as Body, Language, and Mind, the second volume of which Bernárdez refers to as having been published in 2006 (Frank, Dirven, Ziemke and Bernárdez In press); the first volume only appeared when I was writing this review (Ziemke, Zlatev and Frank 2007). The apparent speed of the editing work is also the most apparent weakness of Fabiszak’s book. It is clear that many of the articles would have profited
from corrections, more feedback, and rewriting, and sometimes the ideas are either not developed to their full potential or, in fewer cases, obscured by bad academic English.

With regard to this volume, ‘up to date’ should be understood in the sense of reflecting what occupies people right now and helping to predict which direction they are going in. As regards the field that is most familiar to me, cognitive linguistics, people appear to be attracted by the possibility of moving on from Lakoff and Johnson’s original ideas (e.g. 1980) towards what Bernárdez calls “situatedness of cognition” (pp. 25–26). The book may thus function as a valuable indicator of what is happening on the cognitive linguistic scene. However, it does not provide any detailed, explicit discussion of such matters as the development of cognitive linguistic theory. The reader has to trawl through the articles and references to arrive at a fuller picture. To give a couple of examples, Bernárdez does not mention Zlatev’s notion of “situated embodiment” (1997: 6–7), but Lema Quintana and Guerra de la Torre do (p. 211, 216); while Szwedek does not include discussion of Lakoff and Johnson’s later work in his references to their conceptual metaphor theory (1999), although Bernárdez takes it into account (p. 22, 35). As regards Szwedek’s article, I would also have liked to see a fuller discussion of the development of his own “objectification” theory in order to understand to what extent this article added to the previous ones which he listed in his references.

To conclude, I would have liked to edit this book myself; its topic and wide range of authors must have made it an exciting task. However, I would give it to researchers rather than students (although the editor suggests both as potential target groups, p. 12), except in the case of advanced students who were already familiar with semantic studies and able to compare people’s work and see it in a wider context. I also think that an even more exciting book could have been produced by omitting some of the poorest contributions and adding a couple of invited ones. The book is nevertheless yet another proof of the strength of linguistic work in Poland¹, and certainly worth a browse for any linguist interested in the current state of research into language and meaning.

¹ In case the reader wishes for some other proof, s/he may consider that the 10th International Cognitive Linguistic Conference was successfully held in Kraków this year (2007), or Magnusson, Kardela and Glaz (2007).
References


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Reviewed by Jeannine Fontaine

1. Introduction

Verena Huser (2005) brings formidable precision and an impressive background to her critique of Lakoff and Johnson’s theory of conceptual metaphor. She raises tough questions about their claim that conceptual metaphors underlie sets of linguistic expressions. She also notes that Lakoff and Johnson’s theory “eludes falsification, and for that matter verification” (p. 205). These claims are clearly the stuff of theoretical debate, and we should applaud any scholar who raises them cogently. However, Huser’s polemical tone is at best distracting. Moreover, while it raises crucially important points, her discussion also strays at times into directions that must be seen as tangential to Lakoff and Johnson’s central claims.

2. Issues of tone

2.1 Language

Acknowledging that the impact of Lakoff, Johnson, and their colleagues has been overwhelmingly positive, Huser notes that she is “treading on holy ground” in offering a “critical exposition of [their] approach” (p. 239). In fact, belying this late disclaimer, Huser has by this time trudged into the Lakoff and Johnson sanctuary with heavy combat boots and a very firm step. One needs to read with a critical eye, if only to separate her substantive claims from her often strident tone. Throughout, her phrasing tends to suggest that any support of Lakoff and Johnson is delusional or misguided. She opens by referring to the “experientialist” movement (p. 1) using scare quotes, branding cognitivists as “theorists of this stripe” (p. 1) and implying that more reasonable approaches can be found. To underscore her position, Huser later suggests that the popularity of this book, particularly among scholars who should know better, must be some kind of bizarre mistake. She purports to be “perplexed” that “hardly any philosopher of international reputation has taken up the gauntlet” (p. 7) to oppose Lakoff and Johnson. In a single passage, we are told that their
arguments “[fail] to carry conviction,” that their categorizations are “almost invariably disputable,” and that this poses “insurmountable difficulties” for them (p. 11). Haser’s lexical choice borders on the emotional when she resorts to terms like “irritating” (p. 54).

Ironically, while deftly hefting her own verbal arsenal, Haser attacks Lakoff and his associates for their rhetorical practices, especially their use of repetition (p. 62), which she qualifies as an “irritating” feature of Lakoff (1987: 249). She implies that the very use of this strategy is tantamount to obfuscation, to “[using] rhetoric to make a point that cannot be established by argument” (p. 147). The claim that rhetorical skill in itself constitutes a flaw to be condemned must be seen as at best controversial.

2.2 Use of sources

As with her language, Haser’s citations need to be read with caution. Her opening passage, for instance, contains a subtly misleading reference. After claiming that Lakoff and Johnson’s work can only be judged in light of their statements about experientialist philosophy (pp. 1–2), she appendes a parenthetical note: cf. also Murphy 1996: 174. The implication is that Murphy agrees that philosophy is the crucial meeting ground for any proper discussion of Lakoff and Johnson’s ideas. In fact, surprisingly, Murphy’s article suggests just the opposite: namely, that philosophical criticism “may have drawn attention away from” the authors’ work on metaphorical representation, which he lauds as “an interesting and radical idea which deserves attention in its own right” (Murphy 1996: 174). Far from endorsing Haser’s claim about the centrality of philosophical notions, Murphy is defending his own choice not to address these, as he feels that they may distract from fruitful discussion on conceptual metaphor.

The occasional quote by Lakoff and Johnson’s own text is taken out of context in Haser’s treatment, as happens on p. 85, where the statement “The physical world is what it is,” is made to look quite ridiculous without its supporting text.

2.3 Terms and definitions

Haser focuses closely on certain terms; she berates Lakoff (1987) for using “misleading and ill-defined terminology” (p. 249). She accuses Lakoff and Johnson of “inflating terminological issues and exploiting ambiguities” (p.
57), and of a “refusal to offer necessary definitions and arguments,” as well as a “persistent strategy of evading the issue” (94). Among the offending terms are *objective* (p. 103) and *structure* (p. 166). The hapless term *meaningfulness* draws particular attention: Haser devotes about nine pages of her text largely to attacks on Lakoff and Johnson for their use of this word. Referring to a passage from Lakoff (1987) in regard to the relevant root word, she balefully claims that, “[r]ather than elucidating the question what meaning is, Lakoff states what meaning is not, and what it ‘involves’” (p. 137).

In an ironic twist, Haser herself avoids defining the terms *concept/category* and *meaning*. But she hastens to justify this lack as a conscious decision on her part: “Precise definitions of these terms are notoriously difficult to come up with, but fortunately dispensable in the present context” (p. 125). Presumably, she feels that this same tolerance cannot be extended to Lakoff and Johnson.

### 2.4 The place of philosophy

Devoting much attention to work in philosophy, Haser emphasizes sources that Lakoff and Johnson (1980) fail to note. Admittedly, references are slim in this thin volume intended for a general audience. Haser rightly points out that the authors ignore commonalities with Goodman, Putnam, Black and Beardsley (p. 75), while omitting opposing viewpoints. She criticizes Lakoff and Johnson for putting analytical philosophers in a monolithic ‘objectivist’ category in which some, particularly Putnam and Wittgenstein, do not belong (p. 89). Jackendoff and Aaron (1991) make similar points in a review of a related text. However, Johnson (1981) shows awareness of Goodman’s ideas; moreover, Johnson’s philosophical training cannot have left him unaware of Putnam and Wittgenstein. In fact, it is fair to assume, with Lukeš (in press), that Lakoff and Johnson may have deliberately simplified their picture of other views for the sake of clarity presenting their own distinctive ideas.

Haser’s in-depth discussion of philosophers, notably Davidson, is to be welcomed. In fact, her descriptions of scholarly positions are so compelling that one regrets the occasional listing which is missing from her own reference section (such as Blackburn 1984, cited on p. 82). Still, Haser’s own claims sometimes lack the precision she wishes to champion. For instance, she criticizes Lakoff and Johnson for associating a bevy of philosophers’ names with a correspondence theory of truth (p. 109); in fact,
the relevant passage, from Lakoff and Johnson (1999: 444), links these names with claims not about truth, but about formal mathematical notation, a very different matter. On another front, Haser objects to Lakoff and Johnson’s treatment of Kant (e.g. p. 87); but again, she seems to be focusing more on Kant’s realism (e.g. p. 87), while Lakoff and Johnson (1999) are concerned with morality, a quite different Kantian domain.

2.5 Metaphor wars

A somewhat distracting digression in Haser involves the focus of chapter 3, on Lakoff and Johnson’s ARGUMENT IS WAR metaphor. In elaborating on this proposed conceptual metaphor, Lakoff and Johnson claim that, even in formal contexts such as legal or academic settings, argument tends to take on some of the aspect of war. Their single use of the word unfair occurs only once, in scare quotes, and is meant to portray a (presumably mistaken) position taken by professionals, not a judgment by Lakoff and Johnson themselves.

But Haser reads this as an admonition by the authors themselves against “shady practices” (p. 54), a term that Lakoff and Johnson actually do not use. Building on this, she attributes the term unfair, now shorn of its scare quotes (and later expanded to unfair gimmicks (p. 59)), to the writers themselves. This allows her later to toss the alleged charge back at the pair. More meaningfully, it gives her an opportunity for a disdainful reference to Lakoff’s well-known later work on metaphor in political discourse (p. 55). Her weary claim that “[l]ittle has changed” for these cognitivists is upheld by three dates attributed to Johnson (1993, 1996 and 1998). The fact that her bibliography contains no titles by Johnson in any of these years suggests that they may have been added as an afterthought. The set may have been meant to ensnare Johnson along with his co-author in the accusation of moralizing. However, though both show a concern for moral and ethical issues elsewhere, an objective reader would find little in the language of their early work to suggest an intention to proselytize or prescribe.

Admittedly, Lakoff and Johnson’s list of ‘warlike’ behaviors by scholars may have been somewhat unfortunate. Haser is right to note that their example of ‘intimidation,’ is implausible (p. 55), especially given their illustrative phrase, [i]t is plausible to assume that (Lakoff & Johnson 1980: 64). Her point is well taken that other areas, such as ‘appeal to authority,’ ‘flattery,’ ‘bargaining,’ and ‘evading the issue,’ are far from
exclusive to the the ‘war’ domain (p. 55). In short, the point (that academics and professionals also use tactics that can be linked to an underlying WAR domain) is not fully supported in Lakoff and Johnson’s (1980) brief exposition. Still, I cannot help but think that many professionals will see more than a grain of insight in the claim itself. In fact, Haser’s own style exuberantly exemplifies the two most valid ‘warlike’ examples on the Lakoff and Johnson list: ‘insult’ and ‘belittling.’

3. Theoretical issues

3.1 Metaphor and metonymy

Haser’s Chapter 2 provides a valuable comprehensive overview of theories that have attempted to distinguish metaphor from metonymy. She notes that varying definitions and approaches may single out quite different lists of expressions in either category. Still, here, too, a cautious reading is advised.

To note only one example, Haser covers in some detail the cognitive linguistic claim that metaphors involve two domains, while metonymy involves a single domain (pp. 26–8). She incisively notes problems involving domain definition. However, she then goes on to claim that the “prototypical” metaphor *Achilles is a lion* would fail to achieve metaphor status under the proposed distinction. Since “humans are higher animals” (p. 29), Haser maintains that *Achilles* and *the lion* represent members of a single domain, not separate domains. But Haser’s claim here stands on a thin proviso cited from Barcelona, specifying that one domain may not be “included in the same superordinate domain” as the other (p. 29). In fact, Lakoff and Johnson’s own work emphasizes the importance of “our ordinary conceptual system,” (1980: 99), in which Haser’s problem would not arise, as animals and humans are popularly thought of as distinct. Lakoff and Turner (1989: 66) explicitly note that science and popular conceptions are often at odds in this way:

Cultural models (...) are often at variance with our scientific knowledge. For example, experts on wolves maintain that wolves avoid humans whenever they can; nevertheless, our cultural model of wolves sees them as vicious beasts that attack humans without provocation, often cruelly.

Lakoff and Johnson (1999) also offer a discussion of color as perceived in three different modes, ranging from the scientific to the popular. Haser
herself, elsewhere, presents Putnam as a precursor to Lakoff and Johnson for his claim that terms like gold and tiger are understood by ordinary speakers who may know nothing of the scientific definitions (p. 91). There are clearly intriguing commonalities here on which to build, an opportunity that Haser does not take up.

Haser’s treatment is far too detailed to begin to summarize here; a reader could find new content on each of a dozen readings of the relevant passages, and I can only recommend her Chapter 2 as an excellent overview on this sticky distinction. It is worth noting, however, that Haser’s own approach to the metaphor/metonymy distinction may be the least convincing part of her chapter on the topic. Basically, she asserts that, in metaphor, “knowledge of the target concept does not imply knowledge of the source concept.” So, for instance, in the utterance my job is a jail, sense of the word jail is somehow deemed to be not relevant. Inversely, commenting on the often cited example of metonymy, the ham sandwich standing in for the customer, Haser claims that “one has to know the meaning of ham sandwich” (p. 47) in order to understand the metonymy. This claim leaves considerable question as to what the ‘meaning’ of ham sandwich might be—surely, a naïve waiter who had no sense at all of the Japanese vegetable dish furofuki could still use this term to stand in for the person who ordered it.

3.2 Measuring theories

For anyone thinking about the requirements of a valid theory of metaphor, Haser’s book contains a rich source of ideas. In chapter 7, the author provides a thought-provoking overview of the way in which metaphorical expressions may be classified in multiple ways (for instance, win could belong to the domain of ‘games’ as well as ‘war’, e.g. 179–180); she also discusses the level of generality for source domains (e.g. FIGHT or FORCE, as compared with WAR, pp. 177–179). She vigorously proclaims that these ideas are “not put forward as a positive contribution to the conceptual-metaphor approach. Quite to the contrary (...) They are hoped to foster our suspicion of the very idea of metaphorical concepts” (p. 176). However, a reader sympathetic to cognitive theories could easily ignore Haser’s disclaimer and find much that is enlightening in her discussion. Chapter 8 also focuses on issues such as the status of primary metaphors, and later cognitivist work by Christopher Johnson and Grady.
For any reader able to read beyond the polemical tone, in fact, the book brings up a number of very valid issues throughout—for instance, the partiality of metaphorical transfer (e.g. why we have half-baked ideas, but not sautéed or poached ideas (p. 61–62)). She offers the valid observation that people typically experience arguments before war, which should be kept in mind in looking at the metaphorical link between the two domains (149). And many would agree that the idea of ‘mapping’ is interestingly problematic (if not “incoherent” as Haser phrases it), in cases where interiors are mapped onto entities where they do not exist before the mapping (p. 150); the frequently cited phrase in the garden comes to mind here.

To cite one further point, Haser raises the valid question of how a ‘core’ concept like MORE can be understood independently, and how this independent notion relates to the experientially mediated idea of seeing levels rise when objects are piled up or liquids increased in a container (pp. 155–156). But if such problems are tricky, one does not have to view them as damning for Lakoff and Johnson’s overall theory. In fact, Jackendoff and Aaron (1991: 326) offer an insightful suggestion for revising cognitivist theory in a way that would treat links like MORE IS UP as distinct from what they call “i-metaphors” such as MACHINES ARE PEOPLE, which preserve the “sense of incongruity” that they see as essential to prototypical metaphors.

3.3 Missing entities: Thoughts on body, brain, and experimental evidence

Unfortunately, in heated debates where strong opinions prevail, it is sometimes easy to lose sight of the central issues; in fact, it can be hard to be sure these have been identified. In this case, as complete as Haser’s treatment is on issues of truth in philosophy, there are important topics that she either ignores or mentions only in passing. Nowhere in Haser’s book are the three central claims of Lakoff and Johnson (1999) put forth clearly: namely, that thought is embodied, unconscious, and to a large extent metaphorical.

In particular, the notion of embodiment is central to Lakoff and Johnson’s theory—and it is a concept that grew considerably, both in its formulation and in its claims to empirical support, between 1980 and 1999. In Lakoff and Johnson’s 1980 exposition, embodiment seems like a matter of sense experience (visual and motor programs, for instance). But by 1999,
it has acquired a considerable neurological component, which seems to have continued to evolve and to grow in importance since that time. This is, in fact, a theme that reaches far beyond Lakoff and Johnson’s work, into central areas of recent cognitive science research; yet Haser virtually ignores it. On page 6, she refers back to an “explanation” she has reputedly given for the term ‘embodiment.’ But turning back in her text to see if I have missed something, I find only a brief paragraph on p. 4, followed by the dismissively phrased claim that cognitive linguists are “setting great store by embodiment and imagination…” (p. 5). Far from being a term so easily cast off, this concept requires careful in-depth examination in any focused assessment of Lakoff and Johnson’s work.

On a closely related theme, Haser makes very little mention of the many empirical studies cited in Lakoff and Johnson (1999). Given this blind spot in her approach, Haser misses the important early signs of a critically important research trend. In 1990, when Mark Johnson wrote his *Body in the Mind*, his effort stood virtually alone in its field. But even a cursory search at *amazon.com* today will yield a half dozen related titles on the subject, including Jerome Feldman’s (2007) book; in fact, Feldman is a founding contributor to the Neural Theory of Language group, formed at Lakoff’s home institution of Berkeley. In dismissing a straw-man version of the neurological view (“Neural connections by themselves are not metaphors..,” p. 209), Haser misses the chance to acknowledge what is rapidly turning out to be an accepted viewpoint among cognitive scientists.

Similarly, while Haser mentions the notion of ‘image schema,’ she seems to translate the phrase to ‘mental images,’ which leads her to note Wittgenstein’s opposition to the use of mental images in constructing meaning (140). In fact, the discussion in Lakoff and Johnson (1999) suggests that the two notions are quite distinct; and further elaborations in Johnson and Roher (in press) have upheld this view. All of this has an impact on Haser’s critique. For instance, Haser bases one particular criticism on her assumption that speakers would have the same ‘mental image’ for the words *cat* and *feline* (p. 131). In fact, a more nuanced view would reject this simplistic assumption, based on speakers’ experiences with the two terms.

3.4 An evolving scholarly climate

Haser repeatedly portrays Lakoff and Johnson as scholars who have basically not grown in the quarter century since their theory first appeared.
She claims that “Lakoff/Johnson’s position has not been essentially altered in subsequent works (...)” [i.e. since 1980] (p. 3), emphasizing later that they fail to “explicitly withdraw any of their earlier claims” (p. 161) as time progresses. Haser presumably did not have access to the short postscript in the 2003 edition of *Metaphors We Live By*, in which the authors note both modifications and deletions in their earlier thinking. But even judging from the material at Haser’s disposal, her assumption that basically nothing has changed is striking; it is hard to see how a 624-page book with 17 pages of references could possibly fail to add something to the slim girth and mere fifteen listed sources in Lakoff and Johnson (1980). It is to Haser’s credit that she acknowledges the existence of new theories by others that have elaborated on the conceptual metaphor notion—for instance, work by Grady and Narayanan on the neural theory of metaphor, and, Fauconnier and Turner’s theory of conceptual blending (later expounded in Fauconnier and Turner 2003). But she dismisses these developments as not relevant to her purposes: “To examine all of these approaches in greater detail would far exceed the scope of this book” (p. 161). While this dismissal helps to consolidate the reader’s understanding of Haser’s goals, it also serves to limit her point of view to an area that may be peripheral to evaluating the main claims of cognitive metaphor theory.

This is an important point. Lakoff and Johnson have actually moved quite substantially, in ways that were already clearly visible in Lakoff and Johnson (1999), and in a direction that sets them apart from Haser’s philosophy-rich discussion. Increasingly, one can detect a consistent move on their part toward what they call “second generation cognitive studies” (Lakoff & Johnson 1999). Brain researchers like Antonio Damasio and V.S. Ramachandran were not mentioned by Lakoff and Johnson in 1980, and were only briefly incorporated into their 1999 work; however, they have now featured more prominently in later work on embodiment (cf. Johnson, 2006, and Johnson & Roherer, in press). Interestingly, the philosophers noted in earlier works are neglected in these later expositions, again suggesting a scholarly shift from philosophy to cognitive studies.

One can only imagine that, in future, more collaboration and overlap will occur, with works by Joseph Ledoux (2002) and others entering the picture with their views of the neurological underpinnings of cognition and identity.
4. Conclusion

I have watched generations of students discover Lakoff and Johnson (1980) as a (metaphorical) door opening their minds to a whole new view of how central the figurative is in language. I have enjoyed dozens of class discussions on the ubiquity of metaphor, an area in which I believe no critic can claim that Lakoff and Johnson have failed to make a significant impact. I feel one needs to acknowledge the contribution made with any work that has inspired such rich discussion and debate. As for the many issues raised in cognitive linguistics and metaphor theory more broadly, as well as in philosophy, I believe that the ferment in these areas, as evidenced by Haser’s book, also stand as a healthy sign of evolving thought in the open debate initiated by Lakoff and Johnson.

References


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Reviewed by Angela Bartens

The volume under review is a revised version of the author’s doctoral dissertation defended in 2003 at the University of Helsinki. Miestamo participated in the elaboration of the WALS (World Atlas of Language Structures) project while working on his dissertation and was awarded the 2005 Junior Award of the Association for Linguistic Typology after completing it. Most recently, he has extended his research on symmetric and asymmetric structures to the domain of interrogation.

The sizable volume is divided into six chapters, preceded by a preface and acknowledgments (pp. v–vi), a table of contents (pp. vii–ix), and a list of abbreviations (pp. x–xiii), and followed by four appendices (“Appendix I: Sample languages,” pp. 241–254; “Appendix II: Examples and analyses,” pp. 255–369; “Appendix III: Data table,” pp. 370–408; “Appendix IV: Lists of languages in each type,” pp. 409–411), the notes to the text (pp. 412–431), an impressive list of references (pp. 432–469), and indices of languages (pp. 470–476), authors (pp. 477–483), and subjects (pp. 484–490).

In the “Introduction” (pp. 1–25), Miestamo briefly situates his study in the framework of functional domain typology based on Basic Linguistic Theory and gives an overview of the negation patterns to be discussed. He also summarizes earlier research on negation and defines the key terms used in the study. Most importantly, the object of study, standard negation, is characterized as “the basic way(s) a language has for negating declarative verbal main clauses” (p. 3), and standard negation is divided into symmetric and asymmetric negation according to whether negatives merely add a negative marker to an affirmative structure or whether they show further structural differences as well (p. 7). At the same time, these definitions set the tone for the discussion: the interaction of negation and mood is excluded from the study and the word “structural” apparently marginalizes suprasegmental phenomena such as tonal oppositions which nevertheless constitute the only difference between affirmative and negative structures in such West African languages as Igbo (p. 119).

In “Chapter 2: Theoretical and methodological issues” (pp. 26–50), the author first addresses the issue of compiling a sample. In his study, he
makes use of three different samples: his Core Sample (CS) consists of 240 languages representative of different genera; the Extended Sample (ES) includes 57 more languages on the grounds that they pertain to the WALS sample (a priori, not a very solid criterion); and finally, the Restricted Sample (RS) of 179 is selected from the CS after areally stratifying the sample in order to proportionally represent all geographic macroareas. The definition of standard negation is further refined (pp. 39–45), and the establishing of correlations and functional motivations are discussed. Somewhat surprisingly, the author states that “[t]he terms motivation and explanation are used more or less interchangeably in this work.” This seems contrary to basic logic.

“Chapter 3: Classification” (pp. 51–166) is the most substantial of the text chapters. Negative constructions can be symmetric or asymmetric both on the level of individual structures and on the level of entire paradigms. Asymmetric negative constructions are divided into several types (and their subtypes) according to whether the asymmetry arises from reduced finiteness marking, additional non-real- or emphasis-marking or the divergent marking of other grammatical categories such as person, number, and gender (PNG), or tense, aspect, and mood (TAM). This discussion is very detailed. As can be gleaned from the preface (p. v), part of the examples were moved from Appendix II into the text during the elaboration of the study for publication. While it might seem at first an odd choice to present a large proportion of the analyses the results of the study are based on as part of an appendix, the abundance of material in chapter 3 as it is now definitely justifies presenting only the most interesting cases in the text. The discussion could have been further improved by finding exact parallel sentences for all examples but considering the number and distribution of the languages studied it is obvious that this would not have been possible. As a result of the characterization of the different types of standard negation, a number of implicational universals are proposed, e.g. “if a certain number of distinctions can be made in the negative, at least the same number of distinctions can be made in the affirmative” (p. 161). The chapter ends in a comparison with the classificational attempts made in previous studies (pp. 162–165) which nevertheless have lacked the rigor of Miestamo’s functional-formal criteria.

Although the author has initially declared that the objectives of the study are qualitative rather than quantitative (p. 29), the quantitative dimension is tackled in “Chapter 4: Quantitative data” (pp. 167–194). “Quantitative” would perhaps not be the term chosen by quantitative
linguists as it is here employed to refer to raw data and percentages, not statistical analyses. However, the percentages speak for themselves: symmetric negation is more common than the asymmetric patterns (46% vs. 30% of the RS; p. 172) among which asymmetry based on the reduction of grammatical category and finiteness marking clearly predominate (33% and 25%, respectively; p. 173). Asymmetry in the TAM domain is more common than with PNG categories (p. 175), doubtlessly because of the affinity standard negation has with the verbal domain. The author also demonstrates that the majority of languages (79%) feature but one type of asymmetry (p. 176), and is able to establish typological and areal correlations. For example, free negators are usually preposed and correlate with VO word order while bound negators tend to be postposed and correlate with OV word order (p. 182–190). As far as areal distribution is concerned, for instance symmetric negation is most frequent in Southeast Asia and in the Americas (pp. 190–191).

In “Chapter 5: Functional motivations” (pp. 195–235), the author aims at explaining (cf. infra) the rationale behind his data. He identifies analogy as the central motivating principle. As a consequence, language-internal analogy from form to form is cited to account for symmetric negation whereas language-external analogy from function to form is held responsible for asymmetric negation as different aspects of the functional properties of negation are grammaticalized (p. 200, 204). For example, the stativity of negation is proposed as the motivation of asymmetries deriving from reduced finiteness marking on the negative (p. 206; note, however, that stative affirmatives are not cross-linguistically characterized by reduced finiteness marking). In cases of constructional asymmetry, the same (number of) functional distinctions are made as with the corresponding affirmatives while the number of functional distinctions is usually lower in cases of paradigmatic asymmetry (p. 205). The chapter ends in a discussion of possible diachronic developments in the light of the functional motivations presented (pp. 217–231).

The main findings of the study are resumed in a short concluding chapter (pp. 236–240). The author also points out topics to be addressed by future typological research like other areas of clausal negation, the interaction between negation and other areas of grammar, and the application of the dimension of symmetry to other functional domains (p. 238).

In spite of some minor methodological problems mainly due to the size of the sample (valid generalizations come at a price, for example of the
unavailability of exactly parallel structures), this is the first comprehensive study of standard negation as defined by the author which additionally introduces the important dimensions of symmetry vs. asymmetry and constructional vs. paradigmatic which indeed can be fruitfully explored in other domains. Therefore, the volume under review is obligatory reading for anyone interested in language typology and in recent trends in the field.

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Rezensiert von Jarmo Korhonen


Da die Entwicklung der Phraseologieforschung während der letzten zwei Jahrzehnte so rasant verlief, entstand der Bedarf, die neuen Errungenschaften in einem internationalen Handbuch zu präsentieren. Auch bei der Konzeption des neuen Handbuchs spielten die Germanisten eine maßgeb-


gleich und in der Übersetzung. Ausgangspunkt ist eine Diskussion des Be- 
griffs der „Äquivalenz“, die unter Heranziehung von Beispielen aus mehre-
ren verschiedenen Sprachen erfolgt; außerdem wird auf praktische Anwen-
dungsmöglichkeiten der Ergebnisse kontrastiver Untersuchungen abgeho-
ben. Ein weiterer Artikel fokussiert die Bedeutung des Kulturwissens bei 
der Erforschung interkultureller Aspekte der Phraseologie. Im Zusamme-

hang mit der Erörterung des Übersetzens von Phrasemen kommen sowohl 
theoretische als auch praktische Probleme anhand von literarischen und Ge-
brauchstexten zur Sprache. In Kap. XIV (S. 615–788) werden Eigenheiten 
der Phraseologie einiger ausgewählter indoeuropäischer und nichtindoeuro-
päischer Sprachen sowie von drei Plansprachen vorgestellt. Dabei wurde 
以后的phraseologischen Klassen, dem Verhältnis von Wortbildung und 
Phraseologie, kulturspezifischen Zügen, Auffälligkeiten der Metaphorik 
sowie auch der jeweiligen Forschungs tradition Aufmerksamkeit geschenkt.

Den Schwerpunkt von Kap. XV (S. 789–853) bilden kognitive und 
psycholinguistische Aspekte der Phraseologie. Bei den Darlegungen zur 
kognitiv orientierten Phraseologieforschung stehen u. a. folgende Aspekte 
zur Diskussion: Motivation, Synonymie, Polysemie und semantische Ana-
lyserbarkeit von Idiomen. Unter psycholinguistischem Gesichtspunkt wer-
den Fragen der Speicherung sowie die psychischen Prozesse bei der Pro-
duktion, beim Verstehen und beim Verarbeiten von Phrasemen betrachtet. 
Die Artikel von Kap. XVI (S. 854–908) haben den Spracherwerb und die 
Didaktik von Phrasemen zum Thema. Auf der einen Seite geht es hier um 
die altersspezifische Entwicklung der Verwendung und des Verstehens von 
Phrasemen, auf der anderen Seite um die Behandlung der Phraseologie im 
Mutter- und Fremdsprachenunterricht. Kap. XVII (S. 909–1026) behandelt 
die Phraseografie, d. h. die Darstellung von Phrasemen in der Lexikografie. 
Es werden theoretische, methodologische und praktische Probleme der ein-
und zweisprachigen Phraseografie erörtert, desgleichen werden die phra-
seografischen Traditionen verschiedener Sprachen in ein- und zweisprachi-
gen Wörterbüchern besprochen. In Kap. XVIII (S. 1027–1044) werden 
computerlinguistische Aspekte der Phraseologie vorgestellt. In den entspre-
chenden Darlegungen geht es um die maschinelle Übersetzung sowie um 
die automatische Spracherkennung und Spracherzeugung von Phrasemen. 
Kap. XIX (S. 1045–1077) beschäftigt sich mit korpuslinguistischen Aspek-
ten der Phraseologie. Es werden Methoden und Ergebnisse aktueller Pro-
jekte anhand englischer und deutscher Textkorpora dargelegt, ferner wer-
den Möglichkeiten des WWW als Korpus für Phraseme diskutiert. Schließ-
lich werden in Kap. XX (S. 1078–1145) Fragen der historischen Phraseo-
Die oben dargelegte Skizze des Inhalts des Handbuchs lässt erkennen, dass die Phraseologie hier eine sehr vielseitige Beschreibung erfährt. Eine besondere Erwähnung wert ist die Tatsache, dass Ergebnisse der neuesten Entwicklungen der internationalen Phraseologieforschung in das Handbuch Eingang gefunden haben. Die meisten Autor(inn)en haben sich bei der Erforschung der Phraseologie einen Namen gemacht, so dass auf die in den Artikeln dargebotenen Informationen in der Regel Verlass ist. Kritisch könnte man sich vielleicht zu folgenden Punkten äußern:


Das neue Handbuch stellt aus Sicht der zeitgenössischen Forschung ein höchst aktuelles und in jeder Hinsicht nützliches Nachschlagewerk dar, dessen wissenschaftlichen Wert die oben angeführten Bemerkungen in kei-
ner Weise zu schmälern vermögen. Die Herausgeber haben effektiv und gut zusammengearbeitet, so dass es ihnen gelungen ist, das Handbuch wesentlich schneller als viele vergleichbare Werke zu veröffentlichen. Für ihre Leistung gebührt den Herausgebern volle Anerkennung und ein herzliches Dankeschön.

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